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THE MINERAL INDUSTRY OF PENNSYLVANIA IN 1957

by

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The Mineral Industry of Pennsylvania

This chapter has been prepared under a cooperative agreement for the collection of mineral data, except mineral fuels, between the Bureau of Mines, United States Department of the Interior, and the Pennsylvania Bureau of Topographic and Geologic Survey.

By Robert D. Thomson [1] and Mary E. Otte [2]

SIXTEEN of the twenty-five mineral commodities produced in Pennsylvania in 1957 increased in value of output. Bituminous coal, natural gas, petroleum, and iron ore showed the greatest growth. However, overall mineral output in Pennsylvania was lower in 1957 than in 1956. Substantially lower total values for cement, clays, sand and gravel, and stone resulted in a decline of over $7 million in the total value of Pennsylvania's mineral output.

Mineral fuels, valued at $795 million, supplied 73 percent of the total value of all minerals; nonmetals, valued at $286 million, contributed 26 percent and metals 1 percent.

Sixty-six of the sixty-seven counties reported production of one or more mineral commodities. The major producing counties (in order of decreasing value) were: Washington, Luzerne, Greene, Northampton, Schuylkill, Cambria, and Allegheny.

Consumption, Trade, and Markets.—The major part of the mineral commodities produced in Pennsylvania in 1957 was consumed in the State. Bituminous coal, the most important commodity, was employed locally, for coke production and other industrial uses, for residential fuel, and by powerplants. Bituminous coal was also exported.

Eighty-three percent of the anthracite output was shipped out of the producing regions. Domestic shipments were made principally to Pennsylvania (the leading consumer), New York, New Jersey, and the New England States; exports went mainly to Canada, France, and the Netherlands.

The other mineral fuels produced in Pennsylvania—petroleum, natural gas, and natural-gas liquids—were consumed within the State.

Although Pennsylvania ranks high as a coke producer, some coking coal must be shipped into the State. In 1957 the coal consumed in Pennsylvania for producing coke came from Pennsylvania (67 percent), West Virginia (30 percent), Virginia (2 percent), and Kentucky (1 percent).

Nonmetallic minerals also were important to the mineral economy of Pennsylvania in 1957. It was a surplus producer of cement, consuming only one-third of its production. Cement was shipped to 40 States and the District of Columbia; 30 percent went to New York, 28 percent to New Jersey, 12 percent to Connecticut, 8 percent to

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Ohio, 8 percent to Maryland, and 4 percent to Massachusetts. Most of the lime was consumed within the State (63 percent), but large quantities were shipped to New York (8 percent), New Jersey (6 percent), Maryland (5 percent), Delaware (3 percent), and Maine (2 percent).

Clay production in Pennsylvania was principally captive tonnage, which was used in the many refractory and heavy-clay-product plants scattered throughout the State. Large quantities of industrial sand were produced and consumed, principally within Pennsylvania. Slate producers had a ready market within the State and Eastern United States, the nearest competing States being New York, Vermont, and Virginia. Besides domestic shipments, slate was exported to Canada, South America, and Costa Rica.

Pennsylvania did not produce much metallic ore, and production came entirely from the Cornwall mine. The steel industry relied on shipments of iron ore from other States and from foreign deposits. In 1957 less than 5 percent of the iron ore consumed in blast furnaces came from Pennsylvania. The industry also depends on imports for all its ferroalloys. Other metallic materials and ores were shipped into the State for processing into semifinished or fully fabricated products, such as aluminum, beryllium, lead, and molybdenum.

Legislation and Government Programs.—Under the Federal-State program of mine-water control in the anthracite region, begun in

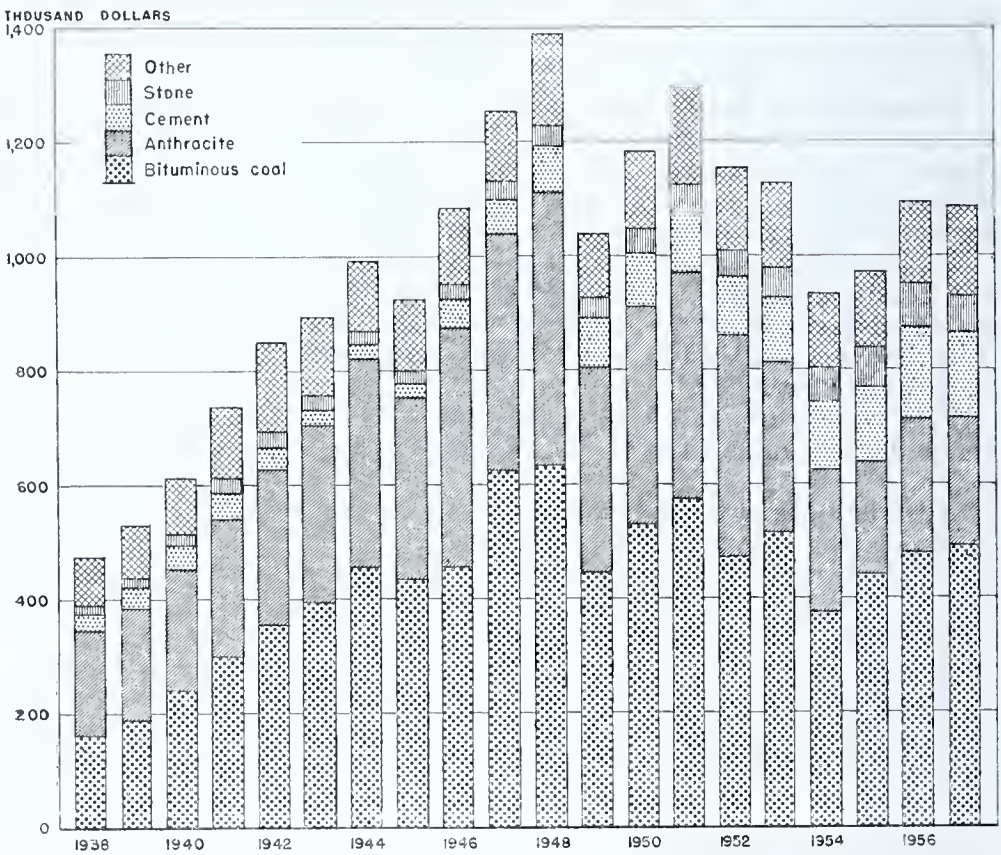

FIGURE 1.—Value of bituminous coal, anthracite, cement, stone, and total value of mineral production in Pennsylvania, 1938–57.

1955, 16 projects were approved by the end of 1957. The total cost, contracted or estimated, was slightly less than $5 million and was shared equally by the Federal and State Governments.

Nine projects required large-capacity, deep-well pumps for controlling the level of water pools in underground workings. Seven projects proposed surface-drainage improvements, such as concrete flumes and pipes, steel and wood flumes, and backfilling abandoned strip pits.

The first project, installation of concrete flumes and culverts in Boston Creek, Luzerne County, was completed in 1957. The completed project is expected to reduce infiltration of surface water into underlying active mines by an estimated 200 million gallons per year.

TABLE 1.—Mineral production in Pennsylvania, 1956–57[1]

Mineral	1956		1957	
	Short tons (unless otherwise stated)	Value (thousands)	Short tons (unless otherwise stated)	Value (thousands)
Cement:				
Portland ---- 376-pound barrels	49,526,640	$153,506	42,519,334	$140,100
Masonry ---- do	2,437,168	8,882	2,161,109	8,030
Clays	[2] 4,412,550	[2] 23,782	4,073,666	22,012
Coal:				
Anthracite	28,900,220	236,785	25,338,321	227,754
Bituminous	90,286,692	479,437	85,365,254	492,539
Cobalt (content of ore) ---- pounds	533,329	[4]	599,122	[4]
Gem stones	[5]	[6]	[5]	[6]
Iron oxide pigment (crude)	600	7	998	9
Lime	1,443,430	18,282	1,298,401	18,406
Natural gas ---- million cubic feet	104,508	33,652	[3] 107,300	[3] 35,400
Natural-gas liquids:				
Natural gasoline ---- tbousand gallons	4,081	251	3,106	192
LP-gases ---- do	1,127	99	1,211	106
Peat	20,498	214	26,086	236
Petroleum (crude) ---- tbousand 42-gallon barrels	8,230	35,718	[3] 8,179	[3] 38,687
Sand and gravel	14,047,068	21,321	12,405,654	19,570
Slate	153,824	4,194	139,283	4,005
Stone	[7] 44,912,987	[7] 73,831	[8] 43,257,558	[8] 73,090
Sulfur (recoverable elemental sulfur) long tons	11,350	386	[4]	[4]
Tripoli	1,030	7	[4]	[4]
Value of items that cannot be disclosed: Copper, gold, iron ore, mica, oystershell (1956), pyrites, sericite schist, silver, stone (dimension basalt 1956), and values indicated by footnote 4	----	16,200	----	16,911
Total Pennsylvania [9]	----	1,088,867	----	1,082,093

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2] Excludes kaolin; value included with items that cannot be disclosed.
[3] Preliminary figure.
[4] Figure withheld to avoid disclosing individual company confidential data.
[5] Weight not recorded.
[6] Less than $1,000.
[7] Excludes certain stones, value for which is included with items that cannot be disclosed.
[8] Includes oystershell.
[9] Total adjusted to eliminate duplicating value of clays and stone in manufacturing lime and cement.

REVIEW BY MINERAL COMMODITIES

MINERAL FUELS

Anthracite.—Anthracite production in Pennsylvania in 1957 resumed a downward trend. Except for 1956, when output was greater than the preceding year, this downward trend has prevailed since

1946. The decline resulted principally from lower space-heating demand and increased use of competitive fuels. Production in 1957 declined 12 percent in tonnage and 4 percent in value, compared with 1956. The average value per ton increased from $8.19 in 1956 to $8.99 in 1957.

As in 1956, the percentage of anthracite produced from underground mines decreased. Output from underground mines represented 50 percent of the total anthracite production (2 percent less than in 1956), whereas output from strip mines represented 30 percent—approximately the same as in 1956. Production from culm banks and dredges totaled 20 percent, compared with 19 percent in 1956.

Apparent consumption decreased 12 percent in quantity, totaling 20.8 million net tons. About 21 million net tons of anthracite was shipped out of the producing area, 4 million tons was sold to local trade, and 279,000 tons was sold as colliery fuel. According to the Pennsylvania Department of Mines, about 71 percent of the anthracite shipped by rail went to the New England States, New York, New Jersey, and Pennsylvania, whereas truck shipments went primarily to the eastern coast, principally to Pennsylvania.

Since 1953 the trend has been for a larger portion of the coal mined underground to be mechanically loaded. In 1957, 53 percent of underground production was mechanically loaded, compared with 49 percent in 1956. In all, 295 scraper loaders, 66 mobile loaders, and 1,437 conveyors and pit-car loaders were used in 1957. Seventy percent of the underground production was loaded by hand-loaded face conveyors and 30 percent by scraper loaders including mobile loaders.

Schuylkill County replaced Luzerne County as the leading county in production of anthracite in Pennsylvania but ranked second to Luzerne County in total value of output. Producers in Schuylkill and Luzerne Counties supplied 66 percent of the total tonnage and 68 percent of the total value. Other counties producing anthracite (in order of decreasing value) were: Northumberland, Lackawanna, Carbon, Columbia, Dauphin, Lancaster, Northampton, Snyder, Sullivan, and Lebanon.

An estimated 2,877 nonfatal injuries and 51 fatal injuries occurred in the anthracite industry in 1957—an improvement compared with 3,330 nonfatal injuries and 56 fatal injuries in 1956. Injury rates in 1957 were 1.15 per million man-hours for fatal injuries and 64.93 per million man-hours for nonfatal injuries, compared with 1.12 and 66.31, respectively, for 1956. Injury rates per million tons in 1957 were 2.00 for fatal and 112.69 for nonfatal injuries. These injury rates were based on a total of 30,825 men working 44,311,269 man-hours to produce 25,530,391 short tons.

Bituminous Coal.—Output from bituminous-coal mining—the leading mineral industry in Pennsylvania—dropped 5 percent in tonnage, about 4.9 million tons less than production in 1956 and 348,000 tons less than in 1955. Despite the drop in tonnage, the value of output rose 3 percent, averaging $5.77 per ton, 46 cents higher than in 1956. Bituminous coal was produced at underground, strip, and auger mines. Seventy-five percent of the tonnage was from underground mines; 25 percent came from strip mines. In 1957, 1,599 mines producing 1,000 tons or more were active. These mines employed

47,000 men—22 percent of the total employment in the United States bituminous industry.

In 1957, 893 underground mines producing 1,000 tons or more were in operation, 104 mines less than in 1956. Of total underground output, 97 percent was cut by machine, including 33 percent mined by continuous miners; the remainder was cut by hand or shot from the solid. Locomotives, shuttle cars, rope hoists, animals, and mother conveyors were used for underground haulage. As in 1956, 91 percent of the underground output was loaded mechanically. Mobile loaders were the primary moving device—loading into shuttle cars supplied 75 percent (3 percent more than in 1956), into mine cars 20 percent (10 percent less than in 1956), and onto conveyors 5 percent (2 percent more than in 1956). Somerset County had the largest number of underground mines (132), but Washington County was the leading producer from underground mines, with an output of 13 million tons. Greene, Cambria, and Allegheny Counties were also important for underground-mine production.

In 1957, 663 strip mines were active, 17 less than in 1956. About 10 percent less coal was produced by stripping methods in 1957 than in 1956. Output totaled 21.2 million short tons, valued at $86.2 million. The average value per ton of strip-mine coal was $4.10, 20 cents more than in 1956.

Electric, diesel-electric, and diesel power shovels and electric, diesel-electric, diesel, and gasoline draglines were used in 1957. Of the 1,427 shovels and draglines in operation, 1,044 were power shovels, of which 976 had a capacity of less than 3 cubic yards, 62 of 3 to 5 cubic yards, 4 of 6 to 12 cubic yards, and 2 of over 12 cubic yards. This was 28 shovels less than were used in 1956—26 fewer of less than 3-cubic-yard, 1 fewer of 3- to 5-cubic-yard, and 1 fewer of over 12-cubic-yard capacity. Draglines totaled 383, 12 more than in 1956, of which 203 had less than a 3-cubic-yard, 109 a 3- to 5- 66 a 6- to 12- and 5 over a 12-cubic-yard capacity. Compared with 1956, 27 more draglines with less than a 3-cubic-yard capacity and 7 more draglines with a 6- to 12-cubic-yard capacity were used. Twenty-three fewer draglines with a 6- to 12-cubic-yard capacity and 1 less dragline with over a 12-cubic-yard capacity were used.

Forty-three auger mines were active in 1957, 10 more than in 1956. Production totaled 367,000 short tons with an average value of $3.55 per ton, an increase of 91 percent in production and 22 percent in value. Auger mines were active in 16 counties; the largest production came from 9 mines in Armstrong County.

Ninety-eight preparation plants were operated in 1957, 2 less than in 1956. These plants produced 49.3 million short tons of clean coal, of which 93 percent came from underground mines and 7 percent from strip mines. Of the total production mechanically cleaned, 87 percent was wet-washed (33 percent by jigs and 67 percent by other wet methods), and 13 percent was cleaned by pneumatic methods.

In 1957, 2 more fatalities were reported for the bituminous-coal industry than in 1956; however, nonfatal injuries (2,060) decreased by 360. Injury rates in 1957 per million man-hours were 0.66 for fatal and 25.16 for nonfatal injuries and, per million tons, 0.63 for fatal and 23.87 for nonfatal injuries. Pennsylvania ranked third among the States in nonfatal injuries per million man-hours and fourth in fatal

injuries per million man-hours. In 1957, 47,000 men worked in bituminous-coalfields for 10,285,000 man-days or 81,860,000 man-hours to produce 86,300,000 short tons of coal.

TABLE 2.—Bituminous-coal production, by types of mining and counties, 1957

County	Underground		Strip		Auger	
	Number of mines	Short tons	Number of mines	Short tons	Number of mines	Short tons
Allegheny	38	6,552,017	27	481,025	1	1,401
Armstrong	62	1,183,329	38	1,098,058	9	96,921
Beaver	3	37,449	11	220,026	1	3,133
Bedford	32	153,710	2	12,913		
Blair	(1)	(1)	(1)	(1)		
Bradford			(1)	(1)		
Butler	30	287,964	45	1,679,211	2	32,089
Cambria	120	10,199,792	26	572,044	(1)	(1)
Cameron			(1)	(1)		
Centre	17	70,651	22	985,496	1	10,800
Clarion	17	150,785	36	2,711,404		
Clearfield	93	1,615,616	120	5,079,205	10	75,027
Clinton	6	34,000	7	552,916	1	8,894
Elk	15	153,608	11	157,220	1	17,588
Fayette	54	5,205,705	51	592,347	1	4,960
Greene	27	12,265,953	2	5,977		
Huntingdon	9	24,066	5	28,060		
Indiana	86	5,700,213	40	1,036,511	4	33,224
Jefferson	43	637,395	32	969,151	2	16,281
Lawrence	(1)	(1)	24	1,012,682	(1)	(1)
Lycoming	4	15,800	2	69,808		
McKean			(1)	(1)		
Mercer	3	50,395	9	457,805		
Somerset	132	2,539,868	72	1,346,118	4	23,622
Tioga	7	43,091	(1)	(1)		
Venango	(1)	(1)	10	810,598		
Washington	27	13,015,406	24	816,610	1	17,095
Westmoreland	64	3,814,788	35	164,810	2	4,427
Undistributed	4	26,326	12	360,733	3	21,137
Total	893	63,777,927	663	21,220,728	43	366,599

[1] Figure withheld to avoid disclosing individual company confidential data; included with "Undistributed."

Coke and Coal Chemicals.—Pennsylvania ranked first in tonnage and value for both beehive and oven coke produced in the United States, supplying 27 percent of the output from slot-type ovens and 77 percent from beehive ovens. A slackening in pig-iron production in the latter part of 1957 affected the production of coke. Output of beehive coke in Pennsylvania decreased 19 percent, and output of oven coke increased only 5 percent. Fourteen plants, operating 4,069 slot-type ovens, carbonized 29.2 billion net tons of coal to produce 20.1 million net tons of oven coke. A total of 2.6 million net tons of coal was carbonized in 8,036 beehive ovens to produce 1.6 million net tons of beehive coke. The average value for oven coke at the ovens was $17.11, compared with $14.42 for beehive coke, an increase of 53 cents per ton for oven coke and 60 cents per ton for beehive coke. Coke produced in Pennsylvania was shipped to blast-furnaces, plants, foundries, and other industrial plants and also was used for residential heating. Ninety-six percent of the coke was consumed at blast furnaces and 1 percent at foundries.

TABLE 3.—Annual capacity of coke ovens owned by iron and steel companies on December 31, 1957, in net tons

Company	Location of plant	Beehive		Other		Total annual capacity
		Number of ovens	Annual capacity	Number of ovens	Annual capacity	
United States Steel Corp. (central operations).	Allegheny County: Clairton			1,503	7,589,900	7,589,900
Pittsburgh Coke & Chemical Co.	Neville Island			105	750,000	750,000
Jones & Laughlin Steel Corp.	Pittsburgh			379	1,301,000	1,301,000
Jones & Laughlin Steel Corp.	Beaver County: Aliquippa			352	2,190,000	2,190,000
Crucible Steel Co. of America	Midland			213	831,600	831,600
United States Steel Corp. (central operations).	Bucks County: Fairless Hills.			174	952,100	952,100
Bethlehem Steel Co	Cambria County: Johnstown.			316	1,836,000	1,836,000
Bethlehem Steel Co	Dauphin County: Steelton.			130	768,000	768,000
Interlake Iron Corp	Erie County: Erie			58	267,000	267,000
Alan Wood Steel Co	Montgomery County: Swedeland.			151	600,000	600,000
Bethlehem Steel Co	Northampton County: Bethlehem.			496	2,136,000	2,136,000
Carpentertown Coal & Coke Co.	Westmoreland County: Mount Pleasant.	277	182,000			182,000
Pittsburgh Steel Co	Various locations			93	644,000	644,000
United States Steel Corp. (central operations).	do	1,240	700,100			700,100

Peat.—Pennsylvania was fifth among the 20 peat-producing States in 1957. Production and value of production in the State increased 27 and 10 percent, respectively, compared with 1956. Varieties of peat produced were humus and reed sedge. Peat was recovered from bogs in Luzerne, Mercer, and Erie Counties, in order of importance.

Petroleum and Natural Gas.—The output of crude petroleum dropped in 1957, whereas production of natural gas increased. Among the States, Pennsylvania ranked 18th as a crude-petroleum producer and 10th as a natural-gas producer. The output of petroleum decreased less than 1 percent in barrels and increased 8 percent in value. The value of crude petroleum at the wells totaled $4.73. Natural gas increased substantially in output (2,792 million cubic feet) and value (nearly $2 million), a 3- and 5-percent increase, respectively.

A total of 833 wells was completed in Pennsylvania in 1957. Of this total, 302 were oil wells; 292, gas wells; 94, dry holes; and 145, service wells. Completed wildcat wells totaled 18 in 1957, of which 3 were in new gas pools and 15 in dry holes. Completed field wells totaled 815 (302 oil wells, 289 gas wells, 79 dry holes, and 215 service wells). Footage for completed wildcat wells totaled 196,799 and for field wells 2,467,979. Eighty-three percent of all wells drilled were put down with cable tools and the remainder by rotary.

Proved recoverable crude-oil reserves in Pennsylvania were estimated at 126 million barrels as of January 1, 1958—6 million barrels less than was reported in 1956 and 14 less than in 1955. The natural-gas reserve was estimated at 854 billion cubic feet as of January 1,

1958. A total of 156 billion cubic feet of new natural-gas reserve was established in 1957.

Natural-Gas Liquids.—Natural-gas liquids, natural gasoline and liquefied-petroleum gas were produced in Pennsylvania in 1957. Natural-gasoline output decreased 24 percent in quantity and value compared with 1956, whereas LP–gas output increased 7 percent in quantity and value. Reserves of natural-gas liquids, as of January 1, 1958, were estimated at 3.5 million barrels—about 3 million barrels more than was reported at the end of 1956.

NONMETALS

Cement.—Activity in the Pennsylvania cement industry declined during 1957, with shipments dropping 14 percent in barrels and 9 percent in value. Shipments in 1957 were less than in the preceding 3 years and totaled only 400,000 barrels more than in 1953.

Pennsylvania ranked first in the United States in output of both portland and prepared cement, producing 15 percent of total United States shipments in 1957.

Portland cement was produced in 8 counties at 24 plants operating during 1957. Lehigh and Northampton Counties continued to be the principal centers of production, supplying 66 percent of the portland-cement shipments—1 percent less than in 1956. Capacity at the 24 plants was reported to be 56 million barrels—67 percent by the dry process and 33 percent by the wet process. The industry reported consuming 1,000 million kilowatt-hours of electrical energy, of which 693 million was purchased from public-utility companies.

Shipments of masonry cement also were less in 1957 than in 1956. Of the plants producing portland cement, 22 also produced masonry cement. Production was principally in Lehigh and Northampton Counties.

TABLE 4.—Shipments of portland cement, 1956–57, by counties

County	1956		1957	
	Barrels	Value	Barrels	Value
Lehigh	8,700,326	$26,513,074	7,239,300	$23,585,408
Northampton	24,278,213	76,401,740	20,616,513	67,448,502
Allegheny, Lawrence, Butler	10,629,275	32,590,052	9,492,915	31,061,528
Berks, Montgomery, York	5,468,826	18,001,060	5,170,606	18,004,400
Total	49,526,640	153,505,926	42,519,334	140,099,838

Clays.—The clay industry declined in 1957; this followed a national trend, which resulted principally from lower demand for refractory materials by the steel, glass, and foundry industries and for lightweight aggregate. However, Pennsylvania ranked second in output of clay, with 9 percent of the United States tonnage of clay and 14 percent of the total value. The State also ranked second in the United States in fire-clay production, fourth in kaolin production, and fifth in tonnage of miscellaneous clay produced.

Fire clay was again the most important clay produced in Pennsylvania, representing 51 percent of the State clay tonnage and 75 percent of the total value of clays. The output of fire clay in 1957 decreased 14 percent in tonnage and 9 percent in value from 1956. This decline was due to a lower demand for refractory materials by the steel, glass, and foundry industries and lower production of heavy clay products.

Declining 1 percent in tonnage and 6 percent in value, miscellaneous clay also decreased in production, although not as drastically as fire clay. Lower demand for miscellaneous clay for producing lightweight aggregate and cement and as filler materials offset a slight increase in the production of heavy clay products.

TABLE 5.—Clays sold or used by producers in 1956–57, by kinds and uses, in short tons

Uses	Fire clay		Miscellaneous clay		Kaolin	
	1956	1957	1956	1957	1956	1957
Refractories:						
Bauxite, high-alumina brick	8,463	[1]				
Firebrick and block	1,089,738	931,680			[2]	9,078
Fire-clay mortar	27,631	[1]				
Foundries and steelworks	136,753	94,815	[1]	[1]		
Miscellaneous refractories	158,672	[1]				
Heavy clay products	995,360	896,076	1,571,625	1,590,363		
Lightweight aggregate		[1]	[1]	126,360		
Paint fillers or extenders			360	219		
Cement			204,668	201,250	[2]	26,555
Undistributed	[3] 26,369	[3] 168,731	[4] 192,911	[4] 28,539		
Total	2,442,986	2,091,302	1,969,564	1,946,731	[2]	35,633

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Figure withheld to avoid disclosing individual company confidential data.
[3] Includes fire clay for art pottery and stoneware, fire-clay mortar, glass and miscellaneous refractories, lightweight aggregate, and high-alumina brick.
[4] Includes miscellaneous clay for art pottery and stoneware, lightweight aggregate, foundries and steelworks, high-grade tile, linoleum and oilcloth, miscellaneous filler, and other uses.

TABLE 6.—Clays sold or used by producers in 1957, by counties

County	Short tons	Value	Types of clay
Adams	59,950	$30,575	Miscellaneous clay.
Allegheny	273,413	863,841	Do.
Armstrong	234,619	3,180,877	Fire clay.
Butler	23,495	38,493	Fire clay, miscellaneous clay.
Cambria	57,544	[1]	Do.
Carbon	43,030	6,777	Miscellaneous clay.
Clarion	96,151	643,303	Fire clay, miscellaneous clay.
Clearfield	577,255	5,106,750	Do.
Columbia	14,617	13,886	Miscellaneous clay.
Cumberland	26,555	159,086	Kaolin.
Fayette	159,135	[1]	Fire clay, miscellaneous clay.
Lancaster	63,061	[1]	Do.
Luzerne	52,200	78,300	Miscellaneous clay.
Lycoming	219	4,218	Do.
Montgomery	76,747	126,821	Fire clay, miscellaneous clay.
Schuylkill	114,507	44,287	Miscellaneous clay.
Washington	43,932	61,432	Do.
Undistributed [2]	2,157,536	11,653,936	
Total	4,073,666	22,012,582	

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Beaver, Berks, Blair, Bucks, Centre, Chester, Clinton, Dauphin, Elk, Huntingdon, Indiana, Jefferson, Lawrence, McKean, Northumberland, Snyder, Somerset, Westmoreland, and York.

Kaolin again was produced in Pennsylvania, declining in both tonnage and value. It was used to produce firebrick and block and portland cement (the most important use).

Clay was produced in 36 counties. Clearfield County led in production, with a value of over $5 million; Armstrong County ranked second, with a production valued at more than $3 million, followed in decreasing order by Beaver, Fayette, and Jefferson Counties.

Gem Stones.—Gem stones were obtained from mineral deposits in Pennsylvania by amateur collectors. They were used largely for mineral collections or handmade jewelry.

Iron Oxide Pigments.—The output of crude iron oxide pigments again increased, rising 66 percent in tonnage and 38 percent in value over 1956. Crude iron oxide pigments consisted solely of the sulfur-mud variety and were produced in Cambria and Elk Counties.

Pennsylvania was the leading State in production of finished natural and manufactured iron oxide pigments. Brown iron oxide, red iron oxide, and burnt umber were the principal finished natural iron oxide pigments, and red iron oxide, yellow iron oxide, and Venetian red the principal manufactured iron oxide pigments.

Lime.—Production of lime in 1957 dropped 10 percent in quantity but increased almost 1 percent in value. Decline in Pennsylvania production was due largely to a lower demand for lime by chemical and other industries. Sales of lime decreased 16 percent for agricultural, refractory, and building purposes and 7 percent for chemical and industrial uses.

Eighteen companies operated 23 plants in 15 counties in 1957, ranking Pennsylvania third among the States in quantity of lime marketed and second in value of sales. Centre County continued to be the leading producing county with nearly one-half of the State's lime output. Centre, Chester, Lancaster, Lebanon, and Mont-

TABLE 7.—Lime sold by producers, 1948–52 (average) and 1953–57, by uses

Year	Agricultural		Building	
	Short tons	Value	Short tons	Value
1948–52 (average)	134,176	$1,497,535	121,329	$1,681,295
1953	116,863	1,367,594	114,839	1,575,387
1954	129,146	1,537,849	120,661	1,697,895
1955	118,274	1,430,454	118,727	1,529,627
1956	[3] 360,718	[3] 5,140,428	110,344	1,456,088
1957	286,720	4,469,173	110,815	1,874,125

Year	Chemical and Industrial		Refractory		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1948–52 (average)	[1] 801,855	[1] $8,781,560	[2] 180,606	[2] $2,473,755	1,237,966	$14,434,145
1953	865,747	9,766,852	237,851	3,300,281	1,335,300	16,010,114
1954	816,044	9,753,519	15,732	217,047	1,081,583	13,206,310
1955	1,083,043	13,178,612	104,007	1,493,101	1,424,051	17,631,794
1956	[3] 972,368	[3] 11,685,619	(4)	(4)	1,443,430	18,282,135
1957	900,866	12,062,525	(4)	(4)	1,298,401	18,405,823

[1] Includes "Refractory" lime for 1950–51.
[2] 1952 only.
[3] Revised figure.
[4] Refractory lime included with "Agricultural" to avoid disclosing individual company confidential data.

TABLE 8.—Lime sold or used by producers, 1956–57, by counties

County	1956		1957	
	Short tons	Value	Short tons	Value
Armstrong	884	$10,185	1,220	$14,658
Blair	192	1,638		
Centre	(1)	(1)	614,653	8,325,614
Dauphin	70,893	686,491	31,313	404,060
Franklin	2,305	20,745	2,307	20,763
Fulton	(1)	(1)	833	7,497
Lebanon	165,418	1,737,841	192,000	2,482,307
Lycoming	1,400	11,200		
Mifflin	(1)	(1)	2,500	28,750
Montgomery	71,782	1,077,063	71,817	1,225,240
Montour	60	378		
Northumberland	485	4,000	700	6,000
Snyder	1,959	13,844	890	8,010
York	142,424	2,136,327	(1)	(1)
Undistributed [2]	985,628	12,582,423	380,168	5,882,924
Total	1,443,430	18,282,135	1,298,401	18,405,823

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Bedford, Butler, Chester, Juniata (1956), Lancaster, and York.

gomery Counties each had an output of over $1 million. Of the total lime sold or used, 79 percent was quicklime and dead-burned dolomite and 21 percent hydrated lime.

Magnesium Compounds.—Production in 1957 dropped mainly because of less demand for precipitated magnesium carbonate and magnesium insulation. Magnesium carbonate, magnesium oxide, and magnesia for insulation were produced from raw dolomite at plants at Ambler and Plymouth Meeting.

Mica.—Output of mica increased slightly in tonnage and value compared with 1956. Mica was mined and processed near Glenville and marketed for use in manufacturing paints and welding rods and as a mold lubricant.

Perlite (Expanded).—Crude perlite mined in Colorado, Nevada, and New Mexico was expanded at plants in Allegheny, Delaware, Lehigh, and Montgomery Counties. A total of 16,858 short tons of expanded perlite valued at $975,398 was marketed from plants in Pennsylvania. Expanded perlite was used principally as an aggregate in building plaster, with smaller quantities used as a filler, soil conditioner, concrete aggregate and in insulation.

Pyrite.—The output of pyrite increased in production and value compared with 1956. The pyrite was obtained as a byproduct of iron mining at Cornwall, Lebanon County, and processed at the Bethlehem Steel Co. plant at Steelton.

Pyrophyllite (Sericite Schist).—Output of sericite schist in 1957 increased in both tonnage and value, principally because of greater demand for processed material as a filler in asphaltic compounds. Sericite schist, after processing, also was marketed as a carrier in insecticide chemicals and for use in joint-filler cements.

Roofing Granules.—The output of natural and artificially colored roofing granules increased in both tonnage and value in 1957. Natural granules represented 28 percent of the total production. Three plants were active—1 at Delta (York County) producing roofing granule from slate, 1 at Charmian (Adams County) using quartzite and basalt, and

1 at Darlington (Beaver County) using clay. In addition to granules, stone flour was produced.

Sand and Gravel.—Sand and gravel output decreased 12 percent in tonnage and 8 percent in value, compared with 1956. Decreased construction and industrial activity hampered the growth of the sand and gravel industry in 1957. Among the States, Pennsylvania ranked 14th in tonnage of sand and gravel produced, with 2 percent of the Nation's total, and 7th in value of sand and gravel, with 3 percent of the Nation's total.

Sand was sold for nine major uses; only engine sand increased in sales. Sand for building purposes decreased 4 percent in tonnage and 3 percent in value; paving sand decreased 16 percent in tonnage and 5 percent in value. Sales of glass, molding, fire, and ground sand also declined.

The quantity of gravel used for each of the four major applications decreased in 1957. Commercial output of building gravel decreased 14 percent in tonnage and 13 percent in value; the output of paving gravel decreased 21 percent in tonnage and 9 percent in value.

Production of sand and gravel by Government agencies increased considerably in tonnage; however, the usage pattern changed. In

TABLE 9.—Sand and gravel sold or used by producers, 1956–57, by uses

Use	1956		1957	
	Short tons	Value	Short tons	Value
COMMERCIAL OPERATIONS				
Sand:				
Building	3,817,152	$4,660,060	3,630,924	$4,812,433
Paving	2,245,280	2,990,176	1,884,880	2,828,916
Other	(3)	(3)	233,272	453,888
Undistributed	[1] 1,827,094	[1] 5,628,849	[2] 1,318,629	[2] 4,280,659
Total	7,889,526	13,279,085	7,067,705	12,375,896
Gravel:				
Building	4,039,259	5,471,500	3,456,047	4,760,230
Paving	1,934,265	2,413,949	1,527,864	2,204,341
Railroad ballast	103,163	76,579	(3)	(3)
Other	57,605	35,228	(3)	(3)
Undistributed			197,432	174,235
Total	6,134,292	7,997,256	5,181,343	7,138,806
Total sand and gravel	14,023,818	21,276,341	12,249,048	19,514,702
GOVERNMENT-AND-CONTRACTOR OPERATIONS				
Sand:				
Building			44,239	15,484
Paving	9,300	16,740		
Total	9,300	16,740	44,239	15,484
Gravel:				
Building			112,367	39,328
Paving	13,950	27,900		
Total	13,950	27,900	112,367	39,328
Total sand and gravel	23,250	44,640	156,606	54,812
Grand total	14,047,068	21,320,981	12,405,654	19,569,514

[1] Includes glass, molding, grinding and polishing, fire or furnace, engine, other uses, and ground sand.
[2] Includes glass, molding, grinding and polishing, fire or furnace, engine, and ground sand.
[3] Included with "Undistributed" to avoid disclosing individual company confidential data.

1956, sand and gravel was used by Government agencies for paving purposes, whereas in 1957 it was employed for building purposes.

In 1957, as in 1956, commercial production of sand and gravel was reported in 41 counties. Bucks County was the leading producer of sand and gravel with 31 percent of the State's total tonnage and 25 percent of the State's total value, followed by Armstrong County, with 11 and 14 percent, respectively. Centre County was the only county that reported Government-and-contractor production. Ninety-eight percent of the sand and gravel production was washed or otherwise processed before use. Of the total commercial sand production, 25 percent was transported by railroads and 47 percent by truck. Of the total gravel production, about 11 percent was transported by railroads and 45 percent by trucks.

TABLE 10.—Sand and gravel sold or used by producers, 1956–57, by counties

County	1956		1957	
	Short tons	Value	Short tons	Value
Armstrong	1,339,083	$2,436,281	1,373,555	$2,692,256
Beaver	437,872	453,279	(1)	(1)
Bedford	10,770	25,525	10,503	30,143
Berks	(1)	(1)	38,844	60,610
Bucks	4,585,135	5,705,930	3,811,626	4,797,972
Cambria	3,500	10,500	3,061	9,183
Carbon	269,593	389,859	227,999	344,456
Centre			156,606	54,812
Crawford	134,535	160,505	98,209	137,984
Cumberland	92,195	136,188	112,835	178,804
Dauphin	44,577	42,374	(1)	(1)
Erie	130,312	168,459	149,871	197,480
Fayette	190,457	446,804	196,337	466,419
Forest	103,050	150,977	(1)	(1)
Franklin	143,198	209,542	135,700	186,013
Luzerne	468,763	554,573	454,271	528,787
Lycoming	847,649	630,090	(1)	(1)
Mercer	267,217	381,092	(1)	(1)
Monroe	205,942	330,338	92,497	128,711
Montgomery	11,000	26,050	(1)	(1)
Northampton	(1)	(1)	280,456	397,014
Northumberland	8,014	9,900	7,890	10,151
Philadelphia	625,325	429,412	553,395	415,045
Schuylkill	215,768	545,487	167,734	564,197
Somerset	(1)	(1)	350	1,050
Wayne	40,142	60,059	71,823	105,638
Undistributed [2]	3,872,971	8,017,757	4,462,092	8,262,789
Total	14,047,068	21,320,981	12,405,654	19,569,514

[1] Figure withheld to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties that must be concealed as indicated by footnote 1 and for the following counties: Allegheny, Blair, Bradford, Butler, Chester (1956), Clearfield, Columbia, Elk (1957), Huntingdon, Lancaster, Lawrence, McKean, Mifflin, Venango, Warren, Wyoming, and York.

Slate.—Despite a drop of 9 percent in quantity and 4 percent in value, the Pennsylvania slate industry continued to rank first in the United States in total value of production and second in total tonnage, representing 36 percent of the Nation's total value and 22 percent of the tonnage. Lower demand for slate as roofing, sanitary, and flagging material and slate granules contributed to the decline of the industry in 1957. The market for slate for billiard tables, school slates, and slate flour also dropped during 1957, whereas demand for electrical slate and grave vaults and covers increased. Slate prices were approximately the same as in 1956, but industry wages increased from 4 to 10 percent during the year.

Quarries were operated in Lehigh, Lycoming, Northampton, and York Counties; Northampton County furnished 79 percent of the value of production. Fifteen operators (1 less than in 1956), were active in producing slate—12 in Northampton County and 1 each in Lehigh, Lycoming, and York Counties.

Slate was exported from Pennsylvania to Canada, South America, and Costa Rica. Exported, in decreasing order, were billboard slate, slate flour, slate granules, roofing slate, billiard slate, structural slate, and school slate. Except for blackboard slate, exports in 1957 were less than in 1956.

Stone.—Stone production in 1957 decreased in both tonnage and value. Tonnage was less than in 1955 or 1956 but greater than in 1954. The decline was due principally to lower demand for dimension stone for rough architectural, curbing, and flagging purposes and crushed stone as concrete aggregate, flux, and riprap. Stone (sandstone, granite, basalt, limestone, shell, and miscellaneous stone) was produced in 45 of the 67 counties, ranking Pennsylvania as the leading stone-producing State in 1957. Of the total State value of stone sold or used, sandstone represented 9 and limestone 81 percent.

Sandstone was marketed as both dimension and crushed stone, decreasing 27 percent in tonnage and 14 percent in value from 1956. Reduced output resulted principally from decreased demand for dimension stone for rough architectural use and crushed stone for concrete aggregate, railroad ballast, and refractory material. About 2 percent less dimension sandstone was marketed in 1957; the sandstone was prepared as rough construction, rubble, rough architectural, dressed, curbing, and flagging stone. About 28 percent less crushed sandstone was marketed in 1957. This stone was marketed as riprap, concrete aggregate, railroad ballast, and refractory material and for miscellaneous uses.

Dimension granite was prepared and marketed from quarries in Pennsylvania. The granite was used as building stone; use as rough architectural stone increased.

The output of basalt increased over 1956 in both tonnage and value. This rise was due principally to a greater demand for dimension stone in rough construction use and for basalt as concrete aggregate and railroad ballast.

The output of miscellaneous stone in Pennsylvania decreased considerably in tonnage and value in 1957. Although demand for dimension miscellaneous stone as rough construction stone and rubble increased slightly, the use of crushed miscellaneous stone as concrete aggregate decreased sharply.

The output of limestone also fell in 1957; crushed limestone decreased 4 percent in tonnage and 2 percent in value. Less demand for dimension limestone as rubble and rough construction material caused a decline in this phase of the stone industry. Increases of 2 percent in the demand for crushed limestone as concrete aggregate, 39 percent as railroad ballast, and 13 percent as agricultural stone were not great enough to offset a 4-percent decrease in the demand for flux and a sharp decline in sales of limestone as riprap.

Basalt was produced in Adams, Berks, Bucks, Centre, Dauphin, Delaware, and Montgomery Counties; granite was produced in

Delaware and Montour Counties. Delaware County led in production of both basalt and granite.

Crushed miscellaneous stone was produced in Bucks and Montgomery Counties. The output of dimension stone was reported from Delaware, Lycoming, Montgomery, and Westmoreland Counties.

Dimension sandstone was produced in 11 counties: Allegheny, Chester, Delaware, Lycoming, Mercer, Montgomery, Potter, Susquehanna, Wayne, Westmoreland, and Wyoming Counties. Crushed sandstone was produced in Bedford, Blair, Bucks, Carbon, Fayette, Huntingdon, Juniata, Lebanon, Lehigh, Luzerne, Mifflin, Montgomery, Northumberland, Schuylkill, Susquehanna, Wayne, and Westmoreland Counties. Luzerne County led in the production of crushed sandstone, whereas Montgomery County led in the production of dimension sandstone.

Dimension limestone was produced in three counties—Bucks, Lancaster, and Chester—with Bucks County leading. Output of crushed limestone came from 35 counties; Northampton County led in output with 5.7 million short tons, followed in decreasing order by counties producing more than 2 million short tons—Montgomery, Lawrence, York, Lebanon, Cambria, Centre, and Lancaster.

TABLE 11.—Stone sold or used by producers, 1956–57, by uses

Use	1956		1957	
	Short tons	Value	Short tons	Value
Dimension stone:				
Building stone [1]	172,413	$1,114,847	211,379	$1,580,456
Monumental stone	168	24,115		
Total dimension stone	172,581	1,138,962	211,379	1,580,456
Crushed and broken stone:				
Riprap	262,089	382,834	[2]	[2]
Concrete and road stone	16,746,444	25,419,908	16,686,666	25,185,979
Railroad ballast	756,014	1,248,772	1,166,649	1,915,052
Furnace flux (limestone)	9,365,869	16,314,675	8,958,591	16,151,026
Refractory	367,700	4,122,215	306,194	3,838,049
Agricultural	759,365	2,610,549	856,641	2,756,244
Other uses	16,482,925	22,592,805	[3] 15,071,438	[3] 21,662,688
Total crushed and broken stone	44,740,406	72,691,758	43,046,179	71,509,038
Grand total	[4] 44,912,987	[4] 73,830,720	43,257,558	73,089,494

[1] Includes "Curbing and flagging" to avoid disclosing individual company confidential data.
[2] Included with "Concrete and road stone."
[3] Includes oystershell.
[4] Incomplete total; excludes certain stones to avoid disclosing individual company confidential data.

Tripoli.—Tripoli (rottenstone) continued to be produced in Pennsylvania. The State ranked last among the three States producing tripoli in 1957, with production slightly more than in 1956. The ground material was used principally as an abrasive and filler.

Vermiculite (Exfoliated).—Crude vermiculite from Montana and the Union of South Africa was exfoliated at plants in Bucks, Clearfield, and Lawrence Counties. The exfoliated vermiculite was used to make cement and refractory and other insulation.

TABLE 12.—Stone sold or used, 1956–57, by counties

County	1956		1957	
	Short tons	Value	Short tons	Value
Allegheny	9,280	$31,442	9,030	$30,949
Berks	2,192,384	2,832,145	(1)	(1)
Bucks	745,468	1,370,960	667,519	1,282,113
Butler	(1)	(1)	2,197,164	4,224,471
Carbon	(1)	(1)	88,255	1,226,700
Centre	2,148,594	3,641,169	2,107,910	3,901,388
Chester	2,059,717	3,139,266	1,795,129	3,258,916
Clinton	158,134	236,808	(1)	(1)
Cumberland	594,146	1,013,487	137,033	282,836
Dauphin	1,351,944	2,298,394	(1)	(1)
Franklin	439,426	702,703	428,527	718,736
Fulton	100,312	152,847	(1)	(1)
Huntingdon	(1)	(1)	503,048	1,840,389
Indiana	1,810	8,145	300	1,200
Lancaster	1,827,280	3,005,250	2,022,971	3,106,309
Lawrence	3,287,899	5,561,574	(1)	(1)
Lebanon	(1)	(1)	2,861,601	5,226,348
Lehigh	2,362,481	2,384,814	1,836,260	2,104,085
Luzerne	(1)	(1)	228,068	364,081
Lycoming	357,682	583,692	(1)	(1)
Mercer	500	2,500	4	1,091
Montgomery	4,689,348	7,770,243	3,797,478	6,625,753
Northampton	6,066,925	5,540,291	5,658,861	5,302,443
Northumberland	(1)	(1)	19,600	29,400
Perry	46,943	94,353	(1)	(1)
Potter	(1)	(1)	5,104	142,072
Schuylkill	(1)	(1)	89,671	594,301
Susquehanna	(1)	(1)	184,322	426,810
Union	(1)	(1)	249,981	413,413
Wayne	131,592	239,698	190,074	354,142
Westmoreland	(1)	(1)	294,699	658,021
Wyoming	(1)	(1)	1,078	24,420
York	2,363,575	4,016,227	2,911,603	4,833,049
Undistributed [2]	13,977,547	29,204,712	14,972,268	26,116,058
Total	[3] 44,912,987	[3] 73,830,720	[4] 43,257,558	[4] 73,089,494

[1] Included with "Undistributed" to avoid disclosing individual company confidential data.
[2] Includes tonnage and value for counties as indicated by footnote 1 and the following counties: Adams, Armstrong, Bedford, Blair, Delaware, Fayette, Juniata, Mifflin, Monroe, Montour, Snyder, and Somerset.
[3] Incomplete total; excludes certain stones to avoid disclosing individual company confidential data.
[4] Includes oystershell.

METALS

Iron Ore.—Shipments of usable iron ore from the Cornwall mine decreased in 1957, chiefly because of a lower demand for ore by the steel industry. All ore produced at the underground Cornwall mine was shipped to the Lebanon concentrator for processing. Iron shipments from the concentrator consisted of sinter and pellets for use in producing pig iron and steel. The copper concentrate produced at the concentrator was transferred primarily to a smelter at Laurel Hill, N. Y., to recover copper, gold, and silver. The pyrite concentrate was processed at Sparrows Point for recovery of sulfur and at Wilmington, Del., for recovery of cobalt.

Pig Iron and Ferrous Scrap.—Consumption of pig iron and ferrous scrap in 1957 totaled 37.7 million short tons, 4 percent less than in 1956. This decrease was due largely to scattered work stoppages in the steel industries and less demand, resulting from a general business

recession in the third and fourth quarters of 1957. Despite an 8-percent decrease in scrap consumption, the use of pig iron remained approximately the same. However, the production of pig iron in Pennsylvania increased 3 percent. During 1957, 18.7 million short tons of domestic iron ore, 4.6 million tons of foreign iron ore, and 10.7 million tons of agglomerate were consumed in the blast furnaces. Classes of pig iron produced in 1957 were: Foundry, basic, bessemer, low-phosphorus, malleable, and direct-casting. More basic and bessemer pig iron was produced than any other class, totaling 17.2 million tons for basic and 2.7 million tons for bessemer.

The annual capacity of blast furnaces in Pennsylvania, as of January 1, 1958, totaled 25.7 million net tons, an increase of 1.5 million net tons in 1957. There were 79 stacks active in 1957, 1 more than in 1956; the addition was at the United States Steel Corp. Fairless Hill plant. Distribution of blast-furnace capacity is shown in table 15.

Iron and steel scrap came principally from Allentown, Harrisburg, Norristown, Scranton, Tarentum, Philadelphia, Pittsburgh, and Wilkes Barre. Of scrap shipped, the leading varieties were Nos. 1 and 2 heavy-melting steel, No. 1 and electric-furnace bundles, No. 2 heavy-melting steel, and cast-iron scrap other than borings.

TABLE 13.—Consumption of pig iron and ferrous scrap in 1956–57, by type of furnace, in short tons

Type of furnace and raw material	1956	1957	Type of furnace and raw material	1956	1957
Open-hearth furnaces:			Blast furnaces:		
Pig iron	17,883,714	18,160,715	Pig iron		
Scrap	14,166,691	13,224,718	Scrap	1,532,895	1,519,257
Total	32,050,405	31,385,433	Total	1,532,895	1,519,257
Bessemer converters:[1]			Ferroalloy furnaces:		
Pig iron	716,047	638,014	Pig iron		
Scrap	79,586	87,254	Scrap	334	341
Total	795,633	725,268	Total	334	341
Electric steel furnaces:			Miscellaneous uses:		
Pig iron	26,715	23,962	Pig iron	[2] 1,422,020	[2] 1,281,961
Scrap	1,897,991	1,536,209	Scrap	[3] 99,552	[3] 93,895
Total	1,924,706	1,560,171	Total	1,521,572	1,375,856
Cupola furnaces:			Total Pennsylvania:		
Pig iron	346,810	301,121	Pig iron	20,450,118	20,450,516
Scrap	767,346	659,080	Scrap	18,707,871	17,255,039
Total	1,114,156	960,201	Total	39,157,989	37,705,555
Air furnaces:					
Pig iron	54,812	44,743			
Scrap	163,476	134,285			
Total	218,288	179,028			

[1] Includes scrap and pig iron consumed in oxygen steel process during 1957.
[2] Direct castings.
[3] Includes small quantity used in crucible furnaces.

TABLE 14.—Annual capacity of blast furnaces, January 1, 1958, in net tons

[American Iron and Steel Institute]

Company	Location of plant	Number of stacks	Total annual capacity (tons)
	Allegheny County:		
U. S. Steel Corp. (central operations)	Braddock	7	2,730,200
Do	Clairton	3	772,600
Do	Duquesne	[1] 6	1,402,900
National Tube Division	McKeesport	4	1,280,000
Pittsburgh Coke & Chemical Co	Neville Island	2	654,000
Jones & Laughlin Steel Corp	Pittsburgh	6	2,105,000
U. S. Steel Corp. (central operations)	Rankin	6	2,305,500
	Beaver County:		
Jones & Laughlin Steel Corp	Aliquippa	5	2,090,000
Crucible Steel Co. of America	Midland	3	895,000
Colorado Fuel & Iron Corp	Berks County: Birdsboro	1	151,200
U. S. Steel Corp. (central operations)	Bucks County: Fairless Hills	3	1,878,000
Bethlehem Steel Co	Cambria County: Johnstown	[2] 7	2,046,000
New Jersey Zinc Co	Carbon County: Palmerton	[3] 2	112,000
Bethlehem Steel Co	Dauphin County: Steelton	3	1,020,000
Barium Steel Corp. (Phoenix Iron & Steel Co.).	Delaware County: Chester	1	200,000
Interlake Iron Corp	Erie County: Erie	1	271,000
Lavino & Co., E. J	Lebanon County: Sheridan	[4] 1	46,660
	Mercer County:		
Sharon Steel Corp	Farrell	2	676,000
Shenango Furnace Co	Sharpsville	2	445,450
Alan Wood Steel Co	Montgomery County: Swedeland	2	544,200
Bethlehem Steel Co	Northampton County: Bethlehem	7	2,718,000
American Steel & Wire Division	Washington County: Donora	2	450,000
Pittsburgh Steel Co	Westmoreland County: Monessen	3	950,000

[1] Includes 302,500 tons ferroalloys capacity.
[2] Includes 240,000 tons ferroalloys capacity.
[3] Spiegeleisen only.
[4] Ferromanganese only.

REVIEW BY COUNTIES

Production of metals and nonmetals in 1957 in 62 of the 67 counties of Pennsylvania was reported. Bituminous coal was produced in 28 counties and anthracite in 12. Production of petroleum, natural gas, and natural-gas liquids is not covered in the county descriptions. A more complete listing of coal producers than is given in this report can be found in Bituminous Coal Division and Anthracite Division 1957 Annual Reports published by the Department of Mines and Mineral Industries, Commonwealth of Pennsylvania.

Adams.—Bethlehem Limestone Co. quarried and crushed limestone at the Hanover operation west of Hanover in Adams County, principally for blast-furnace flux, concrete aggregate, roadstone, stone sand, and railroad ballast. Quantities of the stone were sold under contract to nearby Government agencies for road construction. The Funkhouser Co. continued to operate an open quarry and underground mine east of Charmian in Adams County to produce basalt and quartzite. The basalt and quartzite were crushed and ground at a local mill and sold for use as roofing granules and stone flour.

Production of miscellaneous clay decreased from 68,000 short tons in 1956 to 60,000 in 1957. Output recovered from open pits by Alwine Brick Co. (New Oxford) and Gettysburg Drain Tile Works (Gettysburg), was used to manufacture heavy clay products.

The Summit Mining Corp. operated an open pit 3 miles west of Bendersville and a processing plant at Aspers to produce sericite

TABLE 15.—Value of mineral production in Pennsylvania, 1956–57, by counties [1] [2] [3]

County	1956	1957	Minerals produced in 1957 in order of value
Adams	(4)	(4)	Stone, sericite schist, clays.
Allegheny	$64, 536, 756	$59, 809, 854	Coal, cement, clays, sand and gravel, stone.
Armstrong	15, 915, 421	17, 486, 325	Coal, clays, sand and gravel, stone, lime.
Beaver	4, 687, 410	(4)	Clays, coal, sand and gravel.
Bedford	2, 083, 765	1, 661, 061	Stone, coal, lime, sand and gravel.
Berks	9, 671, 278	9, 604, 834	Cement, stone, clays, sand and gravel, oyster shell.
Blair	2, 453, 437	2, 110, 450	Stone, coal, clays, sand and gravel.
Bradford	(4)	(4)	Sand and gravel, coal.
Bucks	7, 120, 640	(4)	Sand and gravel, stone, clays.
Butler	16, 751, 886	17, 027, 113	Coal, cement, stone, lime, sand and gravel, clays.
Cambria	68, 839, 370	71, 430, 438	Coal, clays, sand and gravel, crude iron oxide pigments.
Cameron	(4)	(4)	Coal.
Carbon	15, 866, 478	10, 023, 818	Coal, stone, sand and gravel, clays.
Centre	16, 623, 942	15, 044, 014	Lime, coal, stone, clays, sand and gravel.
Chester	4, 635, 706	4, 644, 037	Stone, lime, clays, gem stone.
Clarion	14, 236, 105	12, 181, 928	Coal, clays.
Clearfield	(4)	(4)	Coal, clays, sand and gravel.
Clinton	2, 745, 587	2, 650, 497	Coal, stone, clays.
Columbia	6, 186, 419	(4)	Coal, sand and gravel, clays.
Crawford	160, 505	137, 984	Sand and gravel.
Cumberland	1, 149, 675	461, 640	Stone, sand and gravel, clays.
Dauphin	4, 641, 527	4, 214, 567	Stone, coal, clays, lime, sand and gravel.
Delaware	(4)	3, 178, 565	Stone, sulfur.
Elk	(4)	1, 596, 227	Coal, clays, sand and gravel, crude iron oxide pigments.
Erie	(4)	(4)	Sand and gravel, peat.
Fayette	35, 322, 678	40, 836, 337	Coal, clays, stone, sand and gravel.
Forest	150, 977	(4)	Sand and gravel.
Franklin	932, 990	925, 512	Stone, sand and gravel, lime.
Fulton	399, 014	(4)	Stone, lime.
Greene	68, 823, 643	80, 300, 164	Coal.
Huntingdon	5, 848, 287	4, 333, 799	Sand and gravel, stone, coal, clays.
Indiana	36, 557, 072	(4)	Coal, clays, stone.
Jefferson	(4)	(4)	Coal, clays.
Juniata	554, 045	(4)	Stone.
Lackawanna	28, 612, 975	26, 503, 139	Coal.
Lancaster	6, 131, 612	5, 621, 771	Stone, lime, coal, sand and gravel, clays, gem stone.
Lawrence	18, 978, 581	22, 084, 103	Cement, stone, coal, clays, sand and gravel.
Lebanon	20, 130, 548	22, 039, 326	Iron ore, stone, copper, lime, cobalt, pyrite, gold, silver, coal.
Lehigh	(4)	(4)	Cement, stone, oystershell.
Luzerne	91, 793, 125	(4)	Coal, sand and gravel, stone, peat, clays.
Lycoming	1, 493, 880	1, 708, 075	Stone, sand and gravel, coal, tripoli, clays, slate.
McKean	820, 155	614, 601	Clays, coal, sand and gravel.
Mercer	3, 015, 701	2, 607, 174	Coal, sand and gravel, peat, stone.
Mifflin	(4)	(4)	Sand and gravel, stone, lime.
Monroe	(4)	(4)	Stone, sand and gravel.
Montgomery	(4)	13, 660, 095	Stone, cement, lime, clays, sand and gravel.
Montour	(4)	(4)	Stone.
Northampton	83, 082, 046	(4)	Cement, slate, stone, sand and gravel, coal.
Northumberland	26, 593, 629	(4)	Coal, clays, stone, sand and gravel, lime.
Perry	94, 353	(4)	Stone.
Philadelphia	429, 412	415, 045	Sand and gravel.
Potter	(4)	142, 072	Stone.
Schuylkill	69, 799, 731	74, 040, 576	Coal, stone, sand and gravel, clays.
Snyder	388, 141	382, 348	Clays, stone, coal, lime.
Somerset	22, 474, 172	21, 797, 665	Coal, clays, stone, sand and gravel.
Sullivan	57, 042	(4)	Coal.
Susquehanna	(4)	426, 810	Stone.
Tioga	486, 275	(4)	Coal.
Union	(4)	413, 413	Stone.
Venango	(4)	(4)	Coal, sand and gravel.
Warren	(4)	(4)	Sand and gravel.
Washington	95, 669, 087	91, 826, 557	Coal, clays.
Wayne	299, 757	459, 780	Stone, sand and gravel.
Westmoreland	20, 937, 309	(4)	Coal, stoue, clays.
Wyoming	(4)	(4)	Sand and gravel, stone.
York	12, 527, 337	15, 016, 224	Cement, stone, lime, slate, clays, sand and gravel, mica, gem stone.
Undistributed	178, 157, 713	422, 675, 243	
Total	1, 088, 867, 000	1, 082, 093, 000	

[1] Pike County is not listed, because no production was reported.
[2] Excludes value of production for LP-gases, natural gas, natural gasoline, petroleum, and some gem stone, unspecified by counties, but value is included with "Undistributed."
[3] Excludes values of clays and stone used in the manufacture of lime and cement.
[4] Figure withheld to avoid disclosing individual company confidential data; included with "Undistributed."

schist. The crude sericite schist was crushed, ground, air-floated, and dried before marketing as a filler in asphaltic compounds and joint cements and for use in insecticides.

Allegheny.—Ninety-three percent of the bituminous coal mined in Allegheny County in 1957 originated in underground mines; smaller quantities came from strip and auger mines. The 38 active underground mines having 166 cutting machines in operation, produced over 1,000 tons of bituminous coal in 1957, cutting 6.5 million tons. Thirty-seven power shovels and twelve draglines were active at the 27 strip mines in Allegheny County. A total of 6.4 million tons of coal was mechanically loaded in the underground mines; 5.1 million tons was mechanically cleaned. S. & P. Coal Co. operated the only auger mine, mining the Redstone coal seam at the Natali mine.

Universal Atlas Cement Co., a subsidiary of the United States Steel Corp., operated its cement plant at Universal, producing both portland and mortar cements. Pittsburgh Coke & Chemical Co. produced portland-pozzolan, waterproof-portland, and mortar cement at its Neville Island plant.

The production of miscellaneous clay in 1957 increased from 128,000 to 273,000 short tons. The six active companies were at Bridgeville, Creighton, North Bessemer, Pitcairn, and Wilkinsburg. The leading producer was Bridgeville Brick Co.

James H. McCrady, Jr. (Harmarville) and Sidwell Loam Sand Co. (Cheswick) produced sand and gravel for molding sand and other uses.

Francis Matesia produced dimension sandstone from a quarry near Cuddy for use as rubble. Malli Mines produced irregular dimension sandstone from a quarry in Jefferson Borough for rough construction.

Panacalite Perlite Co. (Pittsburgh) and Perlite Manufacturing Corp. (Carnegie) expanded perlite from crude material mined in the Western States. The expanded perlite was marketed principally as aggregate in building plaster; smaller quantities were consumed as concrete aggregate or soil conditioner.

Armstrong.—Bituminous coal was produced in 1957 from 109 mines—62 underground, 38 strip, and 9 auger. Underground mines yielded 50 percent of the total tonnage and strip mines 46 percent. Thirty-two percent of the tonnage produced was mechanically cleaned; 17,000 short tons was wet-washed, using jigs, 603,000 short tons using other wet methods, and 150,000 short tons using pneumatic methods.

In terms of tonnage, Armstrong County ranked fifth among the counties in clay production and second in total clays value. Nine clay producers were active in 1957, with 1 each at Adrian, Craigsville, Freeport, Madison Township, Templeton, and Worthington and 3 at Kittanning. Clay output was used to produce firebrick and block and heavy clay products.

Armstrong County was the second ranking sand-and-gravel-producing county in the State. J. K. Davidson & Bros. operated a dredge along the Allegheny River near Ford City, shipping the material by barge to the company plants at New Kensington and Pittsburgh and to buyers in the Allegheny Valley. Glacial Sand & Gravel Co. (near Kittanning) and Manorville Sand Co. (Manorville) operated

sand and gravel pits; production was used principally as structural and paving material and railroad ballast.

C. D. McCanna (Kittanning) produced crushed limestone for use in making lime. Michigan Limestone Division, United States Steel Corp., produced and crushed limestone at the Kaylor underground mine south of East Brady for use as blast-furnace flux, concrete aggregate, roadstone, and railroad ballast and in manufacturing cement. Some roadstone was sold to local Government agencies.

Agricultural lime was produced by Walter Hershberger, C. D. McCanna, and Robert E. Toy near Kittanning.

Beaver.—Beaver County ranked second in the State in clay production in 1957. Five companies reported production; the leading producers were: R. A. Veon, Inc., Darlington; Negley Fire Clay Co., New Galilee; McQuiston Coal Co., Darlington; Natco Corp., 4 miles east of Negley, Ohio; and McLain Fire Brick Co., Vanport. Fire clay was sold and used to manufacture refractories, pottery, lightweight aggregates, and heavy clay products. Miscellaneous clay was used to produce heavy clay products.

Eighty-four percent of the bituminous-coal production in 1957 came from 11 strip mines, 14 percent from 3 underground mines, and the remainder from 1 auger mine. Nine draglines and seventeen power shovels were used to produce 220,000 short tons of bituminous coal.

Building and paving sand and gravel were produced by Shippingport Sand & Gravel Co. (Shippingport).

The Central Commercial Co. made roofing granules at Darlington, using as raw material miscellaneous clay produced by the company or other local producers.

Bedford.—New Enterprise Stone & Lime Co. (Everett) crushed limestone at the Aschom quarry and plant, principally for concrete aggregate, roadstone, asphalt fill, dust for coal mines, and agricultural uses. Some stone was sold to Government agencies as road material. Leap Ganister Rock Co. (Madley) produced ganister rock, which it crushed and sized at its local plant for use in foundries and steel mills, and in making ferrosilicon.

Ninety-two percent of the bituminous-coal production came from 32 mines; the rest came from 2 strip mines. Thirty-eight percent of the coal mined underground was mechanically loaded, but none of the coal was mechanically cleaned.

Agricultural lime was produced by New Enterprise Stone & Lime Co., Inc., and Mason Kerr. New Enterprise Stone & Lime Co., Inc., produced hydrated lime, using 2 continuous hydrators, and Mason Kerr produced quicklime, using 1 pot kiln.

Feight Bros. recovered and processed building sand from a pit and fixed plant near Everett.

Berks.—Allentown Portland Cement Co., the leading stone producer in the county, quarried limestone and cement rock at the Oley and Evansville quarries. The material was crushed and used at the Evansville No. 1 plant for use in manufacturing cement (types I–II and masonry).

Eastern Lime Corp. produced and crushed limestone from the Hinterleiter quarry at Kutztown and a new quarry at Oley, both in the southeastern part of the county. Berks Products Corp. (Reading) and E. J. Breneman, Inc. (Sinking Spring), also produced crushed

limestone. The stone was used for road material, railroad ballast, agricultural purposes, and cement manufacture. Some road material was sold under contract to local Government agencies.

Basalt, produced by the John T. Dyer Quarry Co., at the Clingan and Birdsboro quarries (both near Birdsboro), was crushed and sized at the local plant for railroad ballast and roadstone. Stowe Trap Rock Co. (Douglassville) quarried and crushed basalt for road material and railroad ballast. Reading Poultry Co. (Reading) crushed oystershell for use as poultry grit.

Glen-Gery Shale Brick Corp. (Wyomissing and Shoemakersville) produced miscellaneous clay from open pits for use in manufacturing building brick.

Four companies produced sand and gravel near Sinking Spring and Temple and at several unspecified locations in the county. Output was used principally as building sand and gravel and paving gravel.

The Beryllium Corp. processed beryl at Reading, producing beryllium metal, beryllium-copper master alloy, beryllium-aluminum, beryllium-nickel, beryllium-iron, and beryllia. This corporation also had rolling, foundry, and fabricating facilities at Reading.

Blair.—Crushed limestone was produced by 4 companies operating 5 quarries; output was used chiefly as concrete aggregate and roadstone but also for agricultural purposes. Leading producer was New Enterprise Stone & Lime Co. (Hollidaysburg and Roaring Spring).

Other companies operated quarries and plants near Altoona, Hollidaysburg, and Claysburg. Quartzite was quarried by Basalt Trap Rock Co. near Williamsburg and crushed and sized for use as railroad ballast, road material, and riprap. General Refractories Co. (Claysburg) and J. L. Hartman, operator of the Sarah Furnace quarry (Sproul), quarried and crushed quartzite for use in making silica brick.

Bituminous coal was mined from 2 underground and 2 strip mines.

Kaolin, fire clay, and miscellaneous clay were produced in Blair County in 1957. Kaolin was produced by Grannas Bros. from the No. 1 open pit near Williamsburg for use in manufacturing firebrick and block. Plastic fire clay was produced by Woodbury Clay Co. (Williamsburg) for use in manufacturing foundry refractories and by Harbison-Walker Refractories Co. (3 miles south of Williamsburg) for use at a local plant in making refractories. Blair Clay Products, Inc. (Altoona), produced miscellaneous clay for making building brick.

Frankstown Sand Supply and George G. Trude recovered building sand from pits in the southern part of the county near Hollidaysburg.

Bradford.—Towanda Sand & Gravel Co., Inc., produced and processed sand and gravel from a pit and fixed plant near Towanda for use as black-top fill. Gravel was sold under contract to the Pennsylvania Department of Highways.

Paul Percival operated the Sand Run mine, mining the Kittanning coal seam.

Bucks.—Bucks County continued to lead in 1957 in sand and gravel production in the State, although there was a decrease in production and value compared with 1956. Warner Co. (Tullytown) operated its Van Sciver and Dredge Franklin plants. Nine other companies produced sand and gravel from pits at Morrisville, Tullytown, New Hope, and Falls Township in the southeastern section

of the county and at Kintersville, Riegelsville, and Upper Black Eddy in the northern part of the county. Production was used principally for building and paving material.

Dimension limestone for use as rubble was quarried by Edward Karpinsky in the southern part of the county near Langhorne. New Hope Crushed Stone Lime Co. (New Hope) and Bituminous Service Co. (Buckingham) produced crushed limestone for road material.

Crushed and dimension basalt was quarried at various sites near Telford, east of Coopersburg in Bucks County, Edison, Quakertown, and Rushland. The crushed material was marketed as road material and railroad ballast. Dimension stone was sold or used as surface plates, architectural stone, paving blocks, and rough and dressed building stone. Samuel M. Yoder Estate operated the Blooming Glen Crushing Works and quarry at Blooming Glen (redstone and bluestone), and George Wiley operated Wiley's quarry (bluestone) near Point Pleasant. Both companies crushed sandstone for road material. George Wiley also produced crushed miscellaneous stone for road material.

Miscellaneous clay was produced from an open pit near Quakertown by Quakertown Brick & Tile Co., Inc., for making building brick.

Hyzer & Lewellen operated a plant at Southampton for exfoliating vermiculite. The vermiculite was sold for various purposes, basically for use in insulation products.

Butler.—Butler County was the third-ranking county in production of strip-mine coal. Strip mining represented 84 percent of the output. At the 45 strip mines 65 power shovels and 43 draglines were used to produce 1.7 million short tons of coal. Thirty underground mines producing 14 percent of the county coal output, and 2 auger mines also were active in 1957. A total of 319,000 short tons of coal, 16 percent of the county production, was mechanically cleaned using jigs.

Penn-Dixie Cement Corp. produced limestone from its underground mine at West Winfield and used the crushed stone at its No. 9 plant for the manufacture of cement. Both portland and mortar cements were produced and marketed by this company.

Michigan Limestone Division of United States Steel Corp. operated the Annondale mine and plant near Boyers, producing crushed limestone for blast-furnace flux, road material, railroad ballast, and cement manufacture. Road material was sold under contract to local Government agencies. Grove City Limestone Co. recovered and crushed limestone for concrete aggregate, roadstone, and agricultural use from a quarry and plant at Branchton.

Mercer Lime & Stone Co. produced quicklime and hydrated lime at its plant one-half mile west of Branchton. Quicklime, marketed for chemical and industrial uses, was the principal product. The hydrated lime was marketed for chemical and industrial uses also, and as agricultural lime.

H. W. Cooper and Highway Sand & Gravel Co., Inc. (both near Slippery Rock), produced sand and gravel for use as building and paving material.

Miscellaneous clay was produced by Scott Borland at Mars for manufacturing building brick. Plastic fire clay was recovered by

D. B. Boosel from an open pit near Slippery Rock for producing firebrick and block.

Cambria.—Cambria County ranked third in production of coal from underground mines; output from the 120 active mines totaled 10.2 million short tons. Ninety-eight percent of the underground production was cut by 344 machines, and 71 percent of the total production was mechanically cleaned. Besides the underground mines, 26 strip mines and 2 auger mines were active in 1957.

Plastic fire clay was produced by Patton Clay Manufacturing Co. (Patton) and Harbison-Walker Refractories Co. (Blandburg), whereas Hiram Swank's Sons, Inc. (South Fork), produced flint fire clay. The fire clay was used in manufacturing glass refractories, building brick, vitrified sewer pipe, and miscellaneous refractories. Miscellaneous clay was produced by Triangle Clay Products Co. from an open pit near Johnstown for use in manufacturing building brick.

Nicosia Stone Quarry operated a pit and fixed plant near Johnstown, producing building sand.

Lanzendorfer Trucking Co. produced and marketed crude iron oxide pigments of the yellow sulfur-mud variety from its No. 31 mine near Twin Rocks for paint pigments.

Cameron.—Bituminous coal was produced in 1957 from one strip mine.

Carbon.—Anthracite was produced from underground and strip mines in 1957. The principal producers of anthracite were Coaldale Mining Co., Inc., Panther Valley Coal Co., Valley Stripping Corp., Spearhead Mining Co., and Gravine Coal Co.

North American Refractories produced ganister rock at the Little Gap quarry and crushed it at Palmerton for use in making silica brick.

Alliance Sand Co., Inc. (Palmerton), produced sand and gravel, principally for building and paving material but also for fire or furnace sand and engine sand. Butz Lumber Co. (Palmerton) produced building sand. Wagner Sand Co. recovered building sand and gravel from a pit and fixed plant near Weatherly.

Panther Valley Coal Co., Inc., produced miscellaneous clay as a byproduct of anthracite mining and sold the material for manufacturing lightweight aggregate.

Centre.—Centre County led the State in lime production; however, output decreased slightly compared with 1956. Three companies reported lime production: Standard Lime & Cement Co., Pleasant Gap, (quicklime); and National Gypsum Co. and Warner Co., both of Bellefonte, (quicklime and hydrated lime). The principal uses of lime were for paper manufacture and metallurgical, chemical, and other industrial uses.

Ninety-two percent of the county's production of bituminous coal came from the 22 active strip mines, 7 percent from 17 underground mines, and the rest from 1 auger mine. About 2 percent of the total production was mechanically cleaned. Forty-one power shovels and thirteen draglines were used to produce strip-mine coal.

Six companies reported output of crushed limestone, principally from quarries near Pleasant Gap, Bellefonte, State College, and Howard. The most important uses of the stone were for concrete aggregate, roadstone, open-hearth flux, and cement manufacture.

Flint fire clay was produced from an open pit near Snow Shoe by

J. H. France Refractories Co. for making firebrick and block. Harbison-Walker Refractories Co. produced plastic fire clay 2 miles northeast of Stormstown for use locally in manufacturing firebrick and block. General Refractories Co., a previous large producer of clay, did not report any production from its mines near Orviston.

The United States Army Corps of Engineers used sand and gravel produced by contractors to construct locks.

Chester.—Bradford Hills Quarry, Inc., the leading limestone producer in the county, operated a quarry and crusher near Downingtown, producing limestone for road material. Valley Forge Stone Co. (Malvern) produced crushed limestone for road material and blast-furnace flux. The Cedar Hollow quarry and plant at Devault, operated by Warner Co., Bellefonte Division, yielded limestone which was crushed for use as blast-furnace flux, in refractories, for manufacture of lime, at chemical plants, and for other purposes. Warner Co. also operated a lime plant near Devault producing both quicklime and hydrated lime from a limestone mine at Cedar Hall quarry. W. E. Johnson, Inc. (Howellville), produced dimension limestone for rough construction and crushed limestone for road material. This operation was taken over by Warner Co. in February 1957.

Keystone Trappe Rock Co. quarried and crushed basalt near Glenmoore for use as road material, railroad ballast, and riprap. Some of the basalt was sold to Government agencies for road construction. V. DiFrancesco & Son (Devault) quarried and crushed basalt as road material and railroad ballast.

French Creek Granite Co. produced black diabase dimension stone from a quarry near Saint Peters for use as rough and dressed building stone, monuments and mausoleums, and paving blocks.

Dimension sandstone was quarried by Alfred V. Moulder, Avondale Colonial quarry (Avondale), and Albert Rotunno, Rotunno quarry (West Grove). The stone was sold or used by the two companies as rough construction stone, rubble, and curbing and flagging. Abe Minor quarried dimension sandstone (bluestone) at the Avon-Grove quarry (Avondale) for rubble, rough architectural blocks, and flagging. John Fecondo & Sons (Avondale) quarried irregular-shaped dimension sandstone for building facestone.

McAvoy Vitrified Brick Co. mined miscellaneous clay near Phoenixville for making building brick. Philip D. Cope produced miscellaneous clay near Nottingham for use in making flowerpots.

Marlyn Fabs (Coatesville) reported collecting garnet as a gem stone.

Clarion.—Clarion County ranked second among the counties in strip mining of bituminous coal in 1957, with 13 percent of the State strip-mine tonnage. Seventy-nine power shovels and 39 draglines were used at the 36 active strip mines in 1957. A smaller quantity of coal was produced from 17 underground mines.

Plastic fire clay was produced by New Bethlehem Tile Co. (New Bethlehem) and Harbison-Walker Refractories Co. (Lucinda); Niles Fire Brick Division, Mexico Refractories Co. (Lucinda) produced flint fire clay. Climax Fire Brick Co. (north of Climax in Clarion County) produced both plastic and flint fire clay. In addition to fire clay, the New Bethlehem Tile Co. produced miscellaneous clay. Frank B. Pope Co. also produced flint fire clay, which was sold on the open market. Fire clay was used in manufacturing firebrick and

block, mortar for refineries, building brick, and other heavy clay products, whereas miscellaneous clay was used to make tile and building brick.

Clearfield.—Clearfield County led in production of bituminous coal from strip mines in 1957, with 24 percent of total State output. Output from the 120 active strip mines represented 75 percent of the county's bituminous-coal production in 1957. Clearfield County with 10 auger mines ranked second in auger-mine production. Ninety-three underground mines were active. At the strip mines, 241 power shovels and 85 draglines were used.

Clearfield County was the leading producer of clays in both tonnage and value in 1957; the output comprised fire clay and miscellaneous clay. Tonnage decreased from 630,000 to 577,000 short tons and value from $5.6 to $5.1 million. Thirteen companies were active in 1957. Plastic fire clay was produced by 8 companies, operating 42 mines near Clearfield. Companies producing over 50,000 short tons of plastic fire clay were Harbison-Walker Refractories Co., Robinson Clay Products Co., and Williamsgrove Clay Product Co., Inc. The production by Harbison-Walker Refractories Co. was used to manufacture refractories; the other two companies used the clay to make building brick and vitrified sewer pipe. Flint fire clay was produced by North American Refractories Co. (Curwensville) and General Refractories Co. (Clearfield); Laclede-Christy Co., Division of H. K. Porter Co., Inc., produced both plastic and flint clay. These fire clays were used in manufacturing refractories. Union Clay Co., Inc. (Grampian), W. K. Turner & Sons (Wallaceton), and Archie K. Baughman (Bigler) produced clay for sale on the open market. Captive production of miscellaneous clay and plastic fire clay was also recovered by Williamsgrove Clay Products Co., Bigler, for making building brick and by Robinson Clay Products Co., Clearfield, for making vitrified sewer pipe.

Clearfield Lime Corp. produced paving gravel from a pit and fixed plant near Clearfield.

Harbison-Walker Refractories Co. exfoliated vermiculite at its No. 2 works. The exfoliated vermiculite was used to manufacture insulation brick.

Clinton.—In 1957, bituminous coal in Clinton County was mined from 1 auger, 6 underground, and 7 strip mines, producing 1, 6, and 93 percent, respectively, of the total county tonnage. Ten power shovels and 6 draglines were used at the strip mines.

Lycoming Silica Sand Co. crushed and sized limestone for concrete aggregate, roadstone, and railroad ballast at the Salona quarry and plant. Some road material was sold under contract to the Pennsylvania Department of Highways.

Diaspore-type fire clay was produced from an open pit by Kelsey Mining Co. and sold for manufacturing high-alumina brick. Mill Hall Clay Products, Inc., produced miscellaneous clay from an open pit for making heavy clay products. North American Refractories reported that the underground mine near Lock Haven and the open pit near Renovo were closed.

Columbia.—Anthracite was produced from underground and strip mines in 1957. The principal producers were: Raven Run Coal Co.; Junedale Coal Co., Inc.; Susquehanna Collieries, Division of the

M. A. Hanna Coal Co.; Sanchez Construction Company; and L. & M. Coal Co.

Bloomsburg Sand & Gravel Co. produced washed building sand and gravel from a pit and processing plant near Bloomsburg.

The Allied Clay Product Co. leased the open pit previously operated by Lloyd E. Eister and used the miscellaneous clay to produce drain-tile and flue liners.

Crawford.—Sand and gravel was produced from five pits in various sections of the county, principally near Cochranton, Saegertown, Conneaut Lake, and Titusville. Output was used mainly for building and paving material. Some sand and gravel was sold to local Government agencies.

Cumberland.—Valley Quarries, Inc. (Shippensburg), and R. W. Smith & Son (Bowmansdale) quarried and crushed limestone, solely for use as road material. Locust Point Stone Quarries (Mechanicsburg) produced limestone for road material and agricultural purposes.

C. L. Goodhart (Walnut Bottom) produced building sand and paving gravel. Raymond Bender & Son and Hempt Bros. (both near Mount Holly Springs) produced building sand and paving sand and gravel, respectively.

Kaolin used to produce portland and other hydraulic cements, was recovered by Philadelphia Clay Co. from an open pit near Mount Holly Springs.

Dauphin.—The Steelton quarry of Bethlehem Limestone Co. in the southwestern area of the county (near Steelton) yielded limestone which was crushed at the local plant for use as blast-furnace flux, concrete aggregate, roadstone, stone sand, and railroad ballast and in refractories. Hoffman Bros. & Wilson, Inc., produced crushed limestone for road material from the Elder quarry and plant in the southwestern area (near Harrisburg). Crushed basalt for road material was produced near Elizabethville by Faylor Lime & Stone Co., and some was sold under contract to the Pennyslvania Department of Highways.

The major part of the anthracite output of this county in 1957 came from underground mines; a small quantity came from strip mines. The principal producers of anthracite were: Spring Glen Coal Co., Reed & Weist Coal Co., Howard Koppenhaver, J. Troup Co., and Hites Coal Co.

Three clay producers were active in 1957. Bethlehem Limestone Co. recovered miscellaneous clay from an open pit near Steelton, selling the material for use in making foundry refractories and protective coating for pipes. Captive clay was produced by Glen-Gery Shale Brick Corp. from open pits near Harrisburg and Middletown, using the miscellaneous clay to make building brick.

H. E. Millard Lime & Stone Co. operated 8 shaft kilns near Hershey to make quicklime for use in open-hearth furnaces and 1 continuous hydrator to produce hydrated lime for agricultural purposes.

Three companies reported output of sand and gravel: F. H. Downey, Inc. (Harrisburg), Highspire Sand & Gravel Co., Ltd. (High Spire), and Pennsylvania Supply Co. (east of Amity Hall). Production of sand and gravel was used mainly as paving material.

Delaware.—General Crushed Stone Co. (Glen Mills) and V. DiFrancesco (Llanerch) produced crushed basalt for use as road material

and railroad ballast. Media Quarry Co. (Media) quarried dimension sandstone for rough construction. Miscellaneous dimension stone for use as rough and dressed building stone was quarried by Carl Galantino, Inc. (Media). F. Cantano & Sons quarried dimension granite at the Foxcroft quarry (Broomall) for rubble and architectural stone. Lima Building Stone Quarry, Inc. (Lima), produced dimension granite as irregular-shaped construction stone.

Perlite Products Corp. operated a plant at Primos to expand perlite, which was marketed principally as a building plaster aggregate.

Sinclair Refining Co. produced brimstone as a byproduct in the liquid purification of gas by the Claus-type process at its Marcus Hook Refinery.

Elk.—Approximately the same quantity of coal was produced from the 15 underground mines as from the 11 strip mines; also active in 1957 was 1 auger mine.

Plastic fire clay was produced by Saint Marys Sewer Pipe Co. for making vitrified sewer pipe. Meyer Clay Mine was operated by William J. Meyer to produce plastic fire clay which was sold on the open market for making firebrick and block.

Stone Haven Mix produced paving gravel at a pit and fixed plant near Johnsonburg and sold it under contract to local Government agencies.

William DeSalve (Brandy Camp) produced and sold sulfur mud for manufacture of paint pigments.

Erie.—Four companies reported output of sand and gravel—three near Fairview, Lake City, and Springfield and one near Erie. Production was used principally as sand and gravel for building and paving and molding sand.

Reed-sedge and humus peat was recovered from a bog in the southeastern section of the county (near Corry) by Corry Peat Products Co.

Fayette.—Ninety percent of the county coal production came from 54 underground mines in 1957. Also active were 51 strip mines and 1 auger mine. Ninety-one cutting machines were used to produce 98 percent of the underground production. Thirty-three percent of the total county output of coal was mechanically cleaned.

Plastic fire clay was produced by Harbison-Walker Refractories Co. (2 miles east of Ohiopyle) and Big Savage Refractories, Division of Mexico Refractories Co. (Ohiopyle) for local plants to use in making firebrick and block. Miscellaneous clay was produced by Layton Fire Clay Co. for use by a nearby company plant in making building brick. Plastic clay and flint fire clay were produced by Robert N. Matthews (Uniontown) and sold on the open market for use in making firebrick and block.

Vesco Corp. crushed, ground, and sized limestone, recovered from the Lake Lynn quarry near Mercersburg, and marketed the stone for road material, rock dust for coal mines, and agricultural use. Connellsville Bluestone Co., south of Scottdale in Fayette County, crushed and sized sandstone for road material, selling some of the material to the Pennsylvania Department of Highways. General Refractories Co. produced crushed ganister rock at the Childs quarry and plant (Layton) for making silica brick.

McClain Sand Co. recovered sand and gravel by dredging in the

southwestern part of the county at Point Marion and washed it for use as paving and road material.

Forest.—Tionesta Sand & Gravel, Inc., recovered and washed building sand and gravel and paving sand from a dredge in the southwestern section of Forest County at Tionesta.

Franklin.—Five companies produced limestone from 6 quarries—2 in the northeastern section of the county near Shippensburg and Orrstown, 2 in the southeastern section near Zullinger and Chambersburg, 1 in the northwestern area near Dry Run, and 1 in the southwestern area near Williamson. The output of crushed stone was marketed mainly for concrete aggregate, roadstone, and agricultural use.

Mount Cydonia Sand Co., Inc. (Chambersburg), and Caledonia Sand Co. (Fayetteville), produced and washed sand for use as building material.

Frank L. Heinbaugh, Mercersburg, produced quicklime for agricultural purposes, using three shaft kilns.

Fulton.—H. B. Mellott Estate, Inc., operated the Charleston quarry (Warfordsburg) and the Morton quarry (Big Cove Tannery), producing crushed limestone for concrete aggregate, roadstone, and agricultural use. Most of the material was sold under contract to Government agencies for road construction. John P. Martz & Son quarried crushed limestone solely for lime manufacture at the Martz Draw Kiln (Hustontown). Lime produced by John P. Martz & Son was marketed for agricultural use.

Greene.—Greene County ranked second in the production of bituminous coal and in output of underground coal, with 14 and 19 percent of total State production, respectively. At the mines, 190 machines were used to cut 12.3 million short tons of coal. Of the county coal production, 80 percent was mechanically cleaned using jigs and pneumatic and other wet methods. Also active in 1957 were 2 strip mines where 3 power shovels were used to produce 6,000 short tons of coal.

Huntingdon.—Huntingdon County ranked third in the value of sand and gravel produced in the State. Alexandria Fire Clay Co. (Alexandria) produced fire or furnace sand from a pit and fixed plant. Pennsylvania Glass Sand Corp. produced washed sand at its quarry and fixed plant at Mapleton Depot for use as glass, molding, and engine sand and for grinding and polishing and miscellaneous purposes. In addition, the company produced ground sand for use in making enamel, foundry molds, glass, pottery, and abrasives.

Tyrone Lime & Stone Co. recovered limestone from the Stover No. 1 quarry (Warriors Mark Township), crushing it for road material, agricultural use, and dust for coal mines. New Enterprise Stone & Lime Co. produced limestone as concrete aggregate and roadstone at its quarry and plant (McConnellstown). A quantity of the stone was sold under contract to the Pennsylvania Department of Highways. Warner Co., Bellefonte Division, produced crushed and sized limestone at the Union Furnace quarry and plant for use as concrete aggregate, roadstone, railroad ballast, and riprap. Ganister rock, quarried and crushed by Harbison-Walker Refractories Co. (Mount Union) and North American Refractories Co. (Three Springs), was used to manufacture silica brick.

Nine underground and five strip mines were active in 1957.

Two companies produced fire clay for making refractories in 1957. Production by Alexandria Fire Clay Co. was sold on the open market; output of Harbison-Walker Refractories Co. was captive production.

Indiana.—Eighty-four percent of the county's bituminous-coal production came from 86 underground mines, and 98 percent of the coal from these mines was cut mechanically. Of the total county production, 80 percent was mechanically loaded and 70 percent mechanically cleaned. More coal was cleaned by methods other than jigs or pneumatic methods. Also active in 1957 were 40 strip mines and 4 auger mines. Indiana was the third ranking auger producer in 1957.

Plastic fire clay was produced from Swank No. 6 underground mine near Clymer by Hiram Swank's Sons, Inc., and used to make pouring pit refractories.

John Kippert and Paul Kippert (Smicksburg) produced crushed limestone for agricultural use.

Jefferson.—Bituminous coal was produced at forty-three underground mines, 32 strip mines, and 2 auger mines. Thirty-nine percent of the coal came from underground mines and 60 percent from strip mines. Sixty-one power shovels and fourteen draglines were used to produce 969,000 short tons of strip-mine coal. About 10 percent of the total county production of the coal was mechanically cleaned.

Plastic fire clay in 1957 was produced by 3 companies—The Brockway Clay Co. (Brockway), Hanley Co. (Summerville), and Henry O'Neill & Co. (Brookville). Production by the first two companies was captive and used to make heavy clay products, whereas production by the third company was sold on the open market for use in making firebrick and block.

Juniata.—Juniata Limestone Co. (McAlisterville, Fayette Township) and W. N. Quigley (Mifflintown) produced crushed limestone for use as road material and sold some under contract to Government agencies. National Refractories Division, Mexico Refractories Co., recovered ganister rock and crushed and used it at the Van Dyke plant (Thompsontown) to manufacture silica brick.

Lackawanna.—Anthracite was produced from underground mines, strip mines, and culm banks in 1957. The principal producers were: Hudson Coal Co., Moffatt Coal Co., Diamond Colliery Coal Co., Inc., Village Slope Coal Co., and Turnpike Coal Co.

Lancaster.—Crushed limestone was produced by 12 companies, operating 15 quarries in 1957. Two leading producers were D. M. Stoltzfus & Son, Inc., operating quarries near Talmage and Quarryville, and Ivan M. Martin, Inc. (Blue Ball). Major production was recovered from operations in the northeastern section of the county near Denver, Talmage, Bareville, Blue Ball, and Ephrata. The limestone was used principally as concrete aggregate, roadstone, stone sand, railroad ballast, and agricultural purposes. Quantities of the stone were sold to State and nearby Government agencies mainly for road construction. Some dimension limestone was produced and marketed for use as facing in constructing houses and churches.

The J. E. Baker Co. operated its Billmyer plant near Bainbridge producing dead-burned dolomite as refractory material. Amos K.

Stoltzfus operated a lime plant 2 miles west of Morgantown, producing hydrated lime for agricultural and building use.

Anthracite was recovered by dredging operations in Lancaster County.

Sand for use as paving material was recovered from pits operated by Hempt Bros. (Elizabethtown) and Milton Grove Sand, Inc. (Milton Grove). A. T. Harris Sand Co. produced washed sand and sold it for use as fire or furnace sand.

Miscellaneous clay, used to make building brick, was produced by Glen-Gery Shale Brick Corp. (Ephrata), A. G. Kurtz & Sons, Inc., and Lancaster Brick Co. (Lancaster). Plastic fire clay was mined from an open pit near Narvon by Whitaker Clay Co. for use in making high-alumina brick and foundry refractories.

Marlyn Fabs reported recovering willemite, a semiprecious gem stone from the southern area of the county along the State line.

Lawrence.—Both portland and mortar cements were produced in Lawrence County in 1957. Production at the Bessemer plant of Bessemer Limestone & Cement Co. consisted of Types I–II, Type III, portland and pozzolan, waterproof-portland, and mortar cement. Types I–II, Type III, waterproof-portland, and mortar cement also were produced by Medusa Portland Cement Co. (Wampum).

Lawrence County again ranked second in value of stone among the counties of the State. Limestone production in the county was used mainly for blast-furnace and open-hearth flux and manufacturing cement; smaller quantities were used for road material, dust for coal mines, and agricultural purposes. The limestone was recovered from 3 quarries in the western section of the county near Bessemer, at Hillsville, and in Mahoning Township and from 1 quarry in the southern area near Wampum.

Twenty-four strip mines, 1 underground mine, and 1 auger mine were active in 1957. A total of 34 power shovels and 23 draglines was used at the strip mines to produce 1 million short tons of bituminous coal.

Fenati Brick Co., Inc. (New Castle), and Metropolitan Brick, Inc. (Bessemer), produced both plastic fire and miscellaneous clay, whereas Keystone Loam & Clay Co. (Edinburg) produced only miscellaneous clay. The captive production by the first two companies was used in making building brick whereas the clay sold on the open market was used in making foundry refractories.

Superior Sand & Supply Co. recovered building sand and gravel and paving sand at its New Castle quarry and plant. Mahoning Valley Sand Co. (West Pittsburg, Taylor Township) produced building and paving sand and gravel.

Zonolite Co. operated a plant at Ellwood City for exfoliating vermiculite.

Lebanon.—Lebanon County was the only county in Pennsylvania producing metal in 1957. Iron, copper, cobalt, pyrites, gold, and silver were mined.

The Cornwall mine, 5 miles south of Lebanon, was operated by Bethlehem Cornwall Corp., a subsidiary of Bethlehem Steel Co. Mining was 98 percent by block caving and 2 percent by open stope. Crude ore from the Cornwall mine was crushed to minus 1⅛ inches at the mine and transported by rail to the Lebanon concentrator. From

the Lebanon concentrator, sinter and pellets were shipped to Steelton, Pa.; pyrite concentrate to Sparrows Point, Md.; and copper concentrates to Laurel Hill, N. Y.

H. E. Millard Lime & Stone Co., the leading limestone producer in the county, operated an underground mine near Palmyra and a quarry near Annville. Chief uses of the output from the company Annville plant were: Blast-furnace flux, road material, manufacture of lime and cement, agricultural purposes, and railroad ballast. In addition to limestone properties, H. E. Millard Lime & Stone Co. operated two lime plants in Lebanon County in 1957. Both quicklime and hydrated lime were manufactured at the Annville plant; the quicklime was marketed principally for metallurgical uses and the hydrated lime for water purification. Quicklime for use in open-hearth furnaces was produced at the Palmyra plant. Limestone also was recovered from 2 other quarries near Annville and Palmyra and from 2 quarries near Cornwall and Lebanon. Output from these four quarries was used principally for blast-furnace and open-hearth flux, concrete aggregate, roadstone, and cement manufacture.

Fialla Crushed Stone Corp. closed the White Hall quarry near Annville owing to the depletion of stone. North American Refractories (Womelsdorf) produced ganister rock, transporting the stone by aerial tram from the quarry to the plant for use in making silica brick.

Anthracite in Lebanon County was recovered solely by dredging.

Lehigh.—Shipments of portland cement from the 5 plants active in 1957 were 17 percent less than in 1956. Types I–II, Type III, and waterproof-portland cement were produced by Coplay Cement Manufacturing Co., Types I–II and Type III by Whitehall Cement Manufacturing Co. (Cementon) and Lehigh Portland Cement Co. (Fogelsville), and only Types I–II by Giant Portland Cement Co. (Egypt) and Lehigh Portland Cement Co. (Ormrod). All plants except the one at Ormrod also produced masonry cements.

The output of crushed limestone and cement rock was used solely for cement manufacture by Lehigh Portland Cement Co. (Ormrod and Fogelsville), Giant Portland Cement Co. (Egypt), and Coplay Cement Manufacturing Co. (Coplay). Lehigh Stone Co. produced limestone at the company quarry and plant at Ormrod, crushing and sizing the material for use as concrete aggregate and roadstone. A quantity was sold under contract to Government agencies. Susquehanna Quarry Co. (Alburtis), produced crushed and broken sandstone for road material. Robert A. Reichard, Inc. (Allentown), crushed oystershell for poultry grit.

Slate was produced from an open quarry and processed by Penn Big Bed Slate Co., Inc.; it was sold for various uses, but primarily for roofing, blackboard, and structural purposes.

The Pennsylvania Perlite Corp. expanded perlite at a plant at Allentown, using crude perlite mined in Nevada and New Mexico.

Luzerne.—Anthracite was produced from underground and strip mines and from banks in 1957. Glen Alden Corp., Lehigh Valley Colliery, Jeddo-Highland Coal Co., M. A. Hanna Co., and Hudson Coal Co. were the principal producers of anthracite in 1957.

Sand and gravel, sold principally for use as building and paving material, was recovered from 5 pits—4 near Wyoming, Forty Fort,

Kingston, and Avoca and 1 in the southern area near Drums. Most of the material was sold under contract to local Government agencies.

The North Mountain quarry (Sweet Valley) of Coon Certified Concrete yielded small quantities of dimension sandstone for rubble and of crushed sandstone for riprap and road material. Hays Bros. Stone Co. (White Haven), produced dimension sandstone (bluestone) for rough construction, dressed architectural, and flagging stone. General Crushed Stone Co. (White Haven), quarried and crushed sandstone for road material and railroad ballast.

Pennsylvania Peat Moss, Inc., recovered humus peat, and Blue Ridge Soil Pep Co. recovered reed-sedge and humus peat from bogs in the southeastern section of the county near White Haven.

Miscellaneous clay was produced from an open pit near Hazleton and used to make building brick by Hazleton Brick Co.

The Beryllium Corp. of Reading, Pa., built a new plant at Ashmore to process beryl to reactor-grade beryllium for the Atomic Energy Commission (AEC). The company converted an old machine shop at an estimated cost of $1,250,000.

Lycoming.—Lycoming Silica Sand Co. recovered limestone from the Lime Bluff quarry near Muncy and the Pine Creek quarry near Jersey Shore. The stone was crushed and sized at local plants for use as road material and agricultural stone. Susquehanna Quarry Co. operated a quarry and crusher near Jersey Shore and produced limestone for road material. Some of the material was sold to local Government agencies. Dimension sandstone was quarried by John T. Morgan (Slate Run) for flagging. Miscellaneous dimension stone sold or used as rubble was quarried by Callahan & Haines (Slate Run).

J. A. Eck & Sons, Inc. (Montoursville), produced building sand and gravel and paving sand. Lycoming Silica Sand Co. (Montoursville) reported output of building and paving sand and gravel, molding and engine sand, sand for use in preparing anthracite, and gravel for railroad ballast.

Bituminous coal was produced from four underground and two strip mines in 1957. None of the production was mechanically cleaned.

Tripoli was produced from open pits by Keystone Filler & Manufacturing Co. and Muncy & Penn Paint & Filler Co., Antes Fort. After crushing, drying, and pulverizing, the rottenstone was marketed for use as an abrasive and filler.

Keystone Filler & Manufacturing Co. produced shale at the Sheddy Quarry near Muncy for use in making paints.

McKean.—Plastic fire clay was produced by Kaul Clay Products Co. from an open pit near Clermont for use at a local plant in manufacturing hot tops for steel mills and vitrified sewer pipes. Plastic fire clay produced by Kness Bros. (Mount Jewett) was marketed for use in manufacturing foundry refractories. Hanley Co. recovered clay from an open pit at Lewis Run for use at a local plant in making building brick and marketed a small quantity for the production of floor and wall tile.

C. L. McGovern, Jr., mined molding sand from a pit at Eldred.

Strip mines were active in 1957, producing bituminous coal.

Mercer.—Ninety percent of the county's bituminous-coal production came from nine strip mines in 1957; the remainder came from

three underground mines where all of the coal was cut by machines. None of the coal produced in the county was mechanically cleaned.

Seger Sand & Gravel (West Middlesex) produced building sand and gravel and paving gravel. Transfer Sand & Gravel (Transfer, South Pymatuning Township) reported output of building sand and gravel and sand for use as fill. Seidle Sand & Gravel Co. (Mercer) produced building sand and paving sand and gravel.

D. M. Boyd and Moores Peat Humus Co. recovered humus peat from bogs north of New Wilmington.

The Rock Kastle quarry (north of Volant), operated by Welty M. Smeltzer, yielded dimension sandstone sold or used as dressed or cut architectural stone.

Mifflin.—James R. Kline's Sons recovered sand by dredging along the Juniata River near Lewistown and sold it for use as building and paving material. Miller Silica Sand Co. operated a pit and fixed plant near Burnham, producing sand for molding, building, and fire or furnace sand and for other uses. Pennsylvania Glass Sand Corp. (McVeytown) recovered sand from a pit and prepared it at a local plant for use as glass, molding, grinding and polishing, and engine sand and for miscellaneous purposes.

The Naginey quarry (near Milroy), operated by Bethlehem Limestone Co., yielded limestone that was crushed and marketed for use as blast-furnace flux, road material, and stone sand. Haws Refractories Co. (Hawstone) used its output of crushed quartzite to manufacture silica brick at a company refractory plant.

Quicklime for agricultural use was produced by Ehrenzeller Lime Co. near McVeytown.

Monroe.—Hamilton Stone Co. produced limestone for concrete aggregate, roadstone, and cement manufacture at the Bossardsville quarry and crusher. Some road material was sold to the Pennsylvania Department of Highways.

Steward White and Clyde White recovered building sand and gravel from a pit near Stroudsburg. Shecsley Minerals, Inc. (Kunkletown), produced paving sand. Coolbaugh Sand & Stone, Inc. (Tobyhanna), produced building and paving sand and gravel, which was sold under contract to local Government agencies.

Montgomery.—Montgomery County continued to lead in the value of stone production in the State, although tonnage decreased 19 percent and value decreased 15 percent from 1956. Five limestone operations, concentrated in the southeastern section of the county near West Conshohocken, Bridgeport, Norristown, Oreland, and Plymouth Meeting, were active during the year. The chief uses for the output from these operations were: Concrete aggregate, roadstone, blast-furnace and open-hearth flux, agricultural purposes, glassmaking, and lime and cement manufacture. Montgomery Stone Co., Inc. (Montgomeryville), produced dimension basalt for use as rough and dressed building stone and crushed basalt for railroad ballast. R. K. Kibblehouse (Perkiomenville) quarried and crushed basalt for road material and sold some under contract to State and local government agencies. Dimension quartzite for rough architectural blocks and crushed stone for steel furnace and converter linings were produced by Fire Stone Products Co., Inc. (Glenside). Wm. Bambi & Sons, Inc. (Norristown), produced crushed sandstone for use as building material. Miscella-

neous stone (argillite) was mined at Harleysville by M & M Stone Co. for road material. A. Manero & Sons (Glenside) produced miscellaneous dimension stone sold as rough building stone. Marcolina Bros., Inc., operated the Hillcrest quarry (Cheltenham) producing dimension granite for use as irregular-shaped construction stone.

Allentown Portland Cement Co. produced cement rock and limestone at its West Conshohocken quarry for use in manufacturing cements at its No. 2 plant. Types I–II portland cement and masonry cement were produced at the West Conshohocken plant.

Quicklime and hydrated lime were produced by G. & W. H. Corson, Inc., Plymouth Meeting. Hydrated lime was marketed for building, agricultural, and metallurgical use, whereas the quicklime was marketed as agricultural lime and refractory material.

Miscellaneous clay was produced by Lansdale Brick Products Co. (Lansdale), Keller-Whilldin Pottery Co. (North Wales), and Norristown Brick Co. (Norristown). This clay was used at local plants to produce building brick and flowerpots. Robinson Clay Product Co. produced plastic fire clay and miscellaneous clay at Pottstown, using the clays at a local plant to make vitrified sewer pipe.

William Bambi & Sons, Inc. (Norristown), recovered sand for building purposes at its pit and local plant.

The Refractory & Installation Corp. expanded perlite at a plant at Port Kennedy, marketing the expanded perlite for use as a filler in refractory materials.

Magnesium carbonate, magnesium oxide, and magnesia insulation were produced from raw dolomite by Keasbey & Mattison Co. (Ambler) and Philip Carey Manufacturing Co. (Plymouth Meeting).

Montour.—Lycoming Silica Sand Co. produced crushed limestone for road material and agricultural use from a quarry and plant east of Milton. Mausdale Quarry Co. quarried limestone, solely for road material, from the Grovania quarry near Danville. Both companies sold some of the road material to local Government agencies.

Northampton.—Northampton remained the leading cement-producing county in Pennsylvania, but output decreased 17 percent in barrels and 12 percent in value compared with 1956. Ten companies reported manufacturing cements from cement rock and limestone, either purchased or produced at local company quarries. Plants were at Martins Creek, Northampton, Stockertown, Bath, Nazareth, Bethlehem, and Sandts Eddy. Output from these plants was comprised of Types I–II, Type III, white portland, and masonry cements.

Northampton County also led in the total value of slate production in 1957. Twelve producers were active in 1957, 5 at Pen Argyl, 4 at Bangor, 2 at Windgap, and 1 at Bath. In value of production, the 5 largest producers were D. Stoddard & Sons, Inc., Anthony Dally & Sons, Stephens Jackson Co., Diamond Slate Co., and Albion Vein Slate Co. The processed slate was marketed for roofing slate, electrical slate, blackboard slate, flagging stone, billiard tables, grave vaults and covers, and structural and sanitary use.

Twelve active producers reported output of limestone and cement rock in the county during the year. The leading producers were: Penn-Dixie Cement Corp. (plant No. 4 at Nazareth and plant No. 6 at Penn Allen); Keystone Portland Cement Co. (Bath); and Hercules Cement Co., Division of American Cement Corp. (Stockertown).

Other operations were scattered throughout the county near Sandts Eddy, Martins Creek, Northampton, Bethlehem, and Brodhead. Most of the limestone and cement rock was used at the company plants to manufacture cement or crushed and sold for road material, railroad ballast, and agricultural purposes.

Paving sand and gravel was produced at a pit by W. J. Lowe & Sons (Bangor). Houdaille Construction Materials, Inc. (Portland), produced sand and gravel for building and paving material and sold a quantity under contract to local government agencies. Dredging was the only method used to recover anthracite in Northampton County.

Northumberland.—Anthracite came principally from underground and strip mines and smaller quantities from banks. The leading producers were Reading Anthracite Co., M. A. Hanna Coal Co., Mammoth Coal Co., Raven Run Coal Co., and Stevens Coal Co. Three companies—Glen-Gery Shale Brick Corp., Watsontown Brick Co., and Watsontown Mineral Products Co.—all at Watsontown, produced miscellaneous clay from open pits for use in making heavy clay products and as a filler in making linoleum and phonograph records. Eugene Meckley produced limestone at Meckley's quarry near Herndon and crushed and ground the stone at a local company plant for road material and agricultural use. A quantity of the roadstone was sold under contract to local Government agencies. Susquehanna Quarry Co. (Dalmatia) produced crushed sandstone for concrete aggregate and roadstone. Sand for building sand and as a fill was mined by Wilsons Sand Plant (Montandon). Molding sand was mined by M. E. Wallace Co. (Sunbury). Agricultural lime was produced in 1957 by Clyde Starook. F. E. Evans Co. did not operate its kilns in 1957.

Perry.—Limestone, used entirely for road material, was quarried and crushed at the local plant near Newport by Bradford Hills Quarry, Inc. A quantity was sold to local Government agencies for road construction.

Philadelphia.—Dredging operations along the Delaware River by The Liberty Corp. (Philadelphia) yielded sand and gravel for use as building material. Some gravel was sold to local Government agencies. The Atlantic Refining Co. continued to recover hydrogen sulfide as a byproduct in the liquid purification of gas at its plant in Philadelphia. The Girdler System using diethanolamine and monoethanolamine was used.

Potter.—Penn Kress Flagstone Co., Inc. (Wharton), quarried dimension sandstone sold or used for rough construction, rough architectural blocks, and flagging.

Schuylkill.—Underground mines, strip mines, and banks were operated in 1957 to produce anthracite. Leading producers in 1957 were: Reading Anthracite Coal Co., Gilberton Coal Co., New Kirk Mining Co., Coaldale Colliery Corp., and Mammoth Coal Co.

The Andreas quarry, operated by Huss Contracting Co., yielded limestone. The stone was crushed and sized at a local plant at Andreas for concrete aggregate and roadstone. Harbison-Walker Refractories (Andreas) crushed and ground quartzite for manufacturing silica brick. Paving and fire or furnace sand was recovered from a

pit in the eastern section of the county near Andreas by Refractory Sand Co.

Miscellaneous clay was produced from an open pit by Auburn Brick Co. for use at a local plant in making building brick. Coaldale Mining Co., Inc., produced miscellaneous clay from an underground mine at Coaldale and marketed it for use in making lightweight aggregate.

Snyder.—Building bricks were manufactured from clay produced by Glen-Gery Shale Brick Corp. (Beavertown) and Paxton Brick Co. (Paxtonville), both operating open pits. Carton L. Comfort (Mount Pleasant Mills) crushed limestone at the local plant for manufacturing agricultural lime. National Limestone Quarry (near Paxtonville) produced and crushed limestone for road material and agricultural use. Anthracite was recovered by dredging operations in the county.

Somerset.—Somerset County led in number of active underground bituminous-coal mines in Pennsylvania, with 132 active mines. Of the county production, 65 percent came from these mines, 34 percent came from 72 strip mines, and the remainder from 4 auger mines. Ninety-five power shovels and 34 draglines were used at the strip mines in 1957.

Plastic fire clay was produced by Otto Brick & Tile Works (Springs) and W. S. Compton Brick Co., Inc. (Salisbury), for producing tile and by Hiram Swank's Sons, Inc. (Maple Ridge and Holsopple), for use in making pouring pit refractories. Flint fire clay was produced by General Refractories Co. at the Fort Hill underground mine for use in making firebrick.

Keystone Lime Co. (Springs) reported output of crushed limestone for agricultural purposes from a quarry and underground mine. Somerset Limestone Co., Inc. (Bakersville), operated the Bakersville quarry and plant, producing crushed limestone usable as road material. Robert Shaulis (Boswell) produced a small quantity of building sand.

Sullivan.—Anthracite was produced by stripping in 1957. The principal producer of anthracite was Bliss Coal Co.

Susquehanna.—Dimension sandstone (mostly bluestone) was recovered from a quarry in the northern part of the county near New Milford and from three quarries in the southeastern section of the county near Lenoxville, Harford, and Kingsley. Output was used as flagging stone. Edwin J. Evans (Brooklyn Township) quarried dimension sandstone usable for rubble and flagging. Keelor Supply Co. produced crushed sandstone for concrete aggregate and road material at the Bennett quarry (Royal).

Tioga.—Bituminous coal was mined from 7 underground and 5 strip mines in 1957.

Union.—Crushed limestone was produced by John L. Iddings and marketed as road material Faylor Lime & Stone Co. operated a quarry and crusher near Winfield, producing limestone for road material and agricultural use.

Venango.—One underground and 10 strip mines produced bituminous coal in 1957. Oil City Sand & Gravel Co. recovered sand and gravel (building and paving) and gravel for use as fill and dirt road stabilization by dredging. Some of the material was purchased by the Pennsylvania Highway Department. Industrial Silica Corp.

produced and prepared sand for use as molding sand at its Utica pit and fixed plant.

Warren.—General Concrete Products Corp. (Warren), recovered sand and gravel for building and paving and sold it under contract to local Government agencies for road construction. Walter Schatzle (Warren) produced building sand and gravel.

Washington.—Washington County in 1957 was the leading county in output of bituminous coal and underground coal with 16 percent of the State's total production and 20 percent of its underground production. The county also led in tonnage of coal cut by machine with a total of 13 million tons cut by 206 machines. Besides the 27 underground mines, 24 strip mines and 1 auger mine were active in 1957. Ninety-five percent of the county production was mechanically loaded; 94 percent was mechanically cleaned.

Three companies—Monongahela Clay Products Co. (Monongahela), Donley Brick Co. (Washington), and Westmoreland Clay Products Co. (Washington)—made building brick from miscellaneous clay produced at local open pits.

Wayne.—Crushed sandstone sold or used for road material was quarried by Wayne Concrete & Sand Works (Lake Ariel). W. R. Strong & Son and Paul Tompkins Estate produced dimension sandstone, principally for use as dressed or cut architectural stone and flagging.

Wayne Concrete & Sand Works produced sand and gravel for building and paving and engine sand from a pit and fixed plant near Lake Ariel. Charles Caputo (Honesdale) mined sand for use as fill.

Westmoreland.—Sixty-four underground bituminous mines, 35 strip mines, and 2 auger mines were active in 1957, producing 3.8 million, 165,000, and 4,000 short tons of coal, respectively. Ninety-eight percent of the underground production was cut by machines. Of the county production, 91 percent was mechanically loaded and 55 percent mechanically cleaned. Use of jigs was a common method of cleaning coal, accounting for 42 percent of the cleaned coal.

Eidemiller Enterprises, Inc., produced crushed sandstone for road material at the Blue Rock quarry (Greensburg). Some of the material was sold to local Government and State agencies. Dimension sandstone sold or used as rubble was quarried by John C. Beaumont and Ray Branthoover (both north of Belle Vernon). Latrobe Construction Co. (Long Bridge) produced crushed limestone as concrete aggregate and roadstone. Dimension miscellaneous stone was recovered at Lynns Quarry (north of Belle Vernon in Westmoreland County) and sold as flagging stone.

Regional Refractories, Inc., produced plastic fire clay for use in manufacturing firebrick and block. Miscellaneous clay was produced by the Westmoreland Clay Products Co. at Youngwood and used to manufacture building brick.

Wyoming.—East Falls Sand & Gravel (Falls) and Wyoming Sand & Stone Co. (Falls Township) operated pits in the southeastern section of the county, producing sand and gravel for use as building and paving material. Engine sand was produced and washed at local company plants.

J. G. Robinson purchased sandstone from various stone producers in the county and processed the stone at the Fort Washington (Montgomery County) plant. The stone was sold or used as flagging.

York.—Medusa Portland Cement Co., the only cement producer in York County, manufactured cement by the dry process at its York plant. Types I–II, Type III, waterproof white, gray portland, and masonry cements were produced and sold.

Production of crushed limestone and cement rock was reported by 10 companies. Concrete aggregate, roadstone, cement manufacture, blast-furnace and open-hearth flux, riprap, and agricultural purposes were the chief uses for the output from these operations. Leading producers were Lincoln Stone, Inc., and Thomasville Stone & Lime Co. (both near Thomasville in the southwestern part of the county). Limestone also came from quarries near Wrightsville in the northeastern section of the county, near York, in the southeastern section, and in a few unspecified locations.

National Gypsum Co. operated its York plant to produce both quicklime and hydrated lime for various uses including agricultural lime, insecticides, paper, and water purification. The limestone used to produce the lime came from a nearby quarry. The J. E. Baker Co. produced dead-burned dolomite at its plant near Botts for use as refractory material.

Funkhouser Co., operating an open quarry at Delta, continued to be the only slate producer in York County. The slate was crushed and ground at a local plant for use as granules and flour.

Two captive clay mines were operated in 1957, both by Glen-Gery Shale Brick Corp. The miscellaneous clay was used at company plants to produce building brick.

Pennsylvania Supply Co. recovered paving sand and gravel from a pit near York Haven. Newman Sand & Supply Co. operated a pit and preparation plant at York, producing mostly building sand but also smaller quantities of sand for paving, engine, and miscellaneous uses.

An open pit and processing plant were operated by General Mining Associates (2 miles from Glenville) to produce ground mica.

Calcite, limonite cubes, and pyrite stones were collected near Thomasville and York by Marlyn Fabs.

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